NASA Contractor Report 177629

Wind Tunnel Test of a Variable-Diameter Tiltrotor (VDTR) Model

David Matuska, Allen Dale, and Peter Lorber

United Technologies Corp.
Sikorsky Aircraft Division
6900 Main Street
Stratford, CT 06601-1381

Prepared for
Ames Research Center
CONTRACT NAS2-13484
January 1994

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, California 94035-1000

FOREWARD

This program was conducted for the Rotorcraft Branch, NASA Ames Research Center, under Contract NAS2-13484 . This program was carried out under the technical cognizance of Karen Studebaker of the Rotorcraft Technology Branch, NASA Ames. NASA Ames personnel participating in the wind tunnel test included Karen Studebaker and John Madden.

Sikorsky engineering personnel directly involved in this test program included David Matuska (Program Manager), Anthony Saccullo (Test Conductor), Allen Dale (Dynamicist), Joseph DeFilippo (Technical Specialist), and John O'Neill (Technical Specialist). Post-test data processing was substantially assisted by Edward Gronenthal. Sikorsky engineering personnel directly involved in the design of the wind tunnel model included Gordon Miller (Head Designer), W. Donald Jepson, and Vincent Millea.

United Technologies Research Center personnel directly involved in this test program included Paul Brown, Dr. Peter Lorber, Al Covino, Dave Russel, Al Walker, Jim Wilkinson and Jim Bernabio.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Continued)

LIST OF ILLUSTRATIONS (Completed)

SYMBOLS AND ABBREVIATIONS

A-D	Analog to Digital
a1s	First Harmonic Longitudinal Flapping with respect to the Shaft
A1s	First Harmonic Lateral Cyclic Pitch with respect to the Shaft
b	Number of Rotor Blades
b1s	First Harmonic Lateral Flapping with respect to the Shaft
B1s	First Harmonic Longitudinal Cyclic Pitch with respect to the Shaft
BPI	Bits per inch
c	Rotor Blade Chord
CD	Rotor Drag Coefficient, $D/(\pi R^2\rho(\Omega R)^2)$
CL	Rotor Lift Coefficient, $L/(\pi R^2\rho(\Omega R)^2)$, or Wing Lift Coefficient, $L/(0.5\rho V^2 S)$, depending on the Context
cps	cycles per second
CQ	Rotor Torque Coefficient, $Q/(\pi R^2\rho(\Omega R)^2 R)$
CT	Rotor Thrust Coefficient, $T/(\pi R^2\rho(\Omega R)^2)$
D	Rotor Drag
EHPIC	Evaluation of Hover Performance using Influence Coefficients
FFT	Fast Fourier Transformation
F.M.	Rotor Figure of Merit, (Ideal Hover Power)/(Actual Hover Power)
HP	horse power
I_θ	Blade Torsion Weight Inertia
L	Rotor Lift

SYMBOLS AND ABBREVIATIONS (Completed)

Q	Rotor Torque
RPM	Revolutions per Minute
S	Wing Area
SMV	Static Moment Variation
UTRC	United Technologies Research Center
ρ	Air Density
σ	Rotor Solidity, $(bc)/(\pi R)$
Ω	Rotor Shaft Angular Velocity
v	Rotor Induced Velocity
( )*	Coefficients Calculated using Reference Blade Radius of 4.1 feet

SUMMARY

This report documents the results from a wind tunnel test of a 1/6th scale Variable Diameter Tiltrotor (VDTR). This test was a joint effort of NASA Ames and Sikorsky Aircraft. The objective was to evaluate the aeroelastic and performance characteristics of the VDTR in conversion, hover, and cruise. The rotor diameter and nacelle angle of the model were remotely changed to represent tiltrotor operating conditions. Data is presented showing the propulsive force required in conversion, blade loads, angle of attack stability and simulated gust response, and hover and cruise performance. This test represents the first wind tunnel test of a variable diameter rotor applied to a tiltrotor concept. The results confirm some of the potential advantages of the VDTR and establish the variable diameter rotor a viable candidate for an advanced tiltrotor.

This wind tunnel test successfully demonstrated the feasibility of the Variable Diameter Rotor for tiltrotor aircraft. A wide range of test points were taken in hover, conversion, and cruise modes. The concept was shown to have a number of advantages over conventional tiltrotors such as reduced hover downwash with lower disk loading and significantly reduced longitudinal gust response in cruise.

In the conversion regime, a high propulsive force was demonstrated for sustained flight with acceptable blade loads. The VDTR demonstrated excellent gust response capabilities. The horizontal gust response correlated well with predictions revealing only half the response to turbulence of the conventional civil tiltrotor.

INTRODUCTION

This report documents the wind tunnel test of a semi-span variable-diameter tilt rotor model. The purpose of this testing was to evaluate aeroelastic and performance characteristics of the variable-diameter tilt rotor in hover, forward flight, and in the conversion between these two regimes while the rotor underwent both tilt and diameter change. In addition, stability derivatives, control power, and gust response characteristics were explored.

MODEL DESCRIPTION

A semi-span variable-diameter tilt rotor model (Figure 1) is scaled to one-sixth of a nominal 30-passenger civil tilt rotor aircraft design (Figure 2) and is similar in concept and construction to the rotor design previously tested successfully in the compound/stowed rotor regime, with some mechanical modifications to accommodate a gimbal hub (Ref. 1). This model is aeroelastically scaled for accurate blade flatwise, edgewise and torsion response at one-half of full-scale tip speed. Full-scale tip speed for this rotor design is 680 fps.

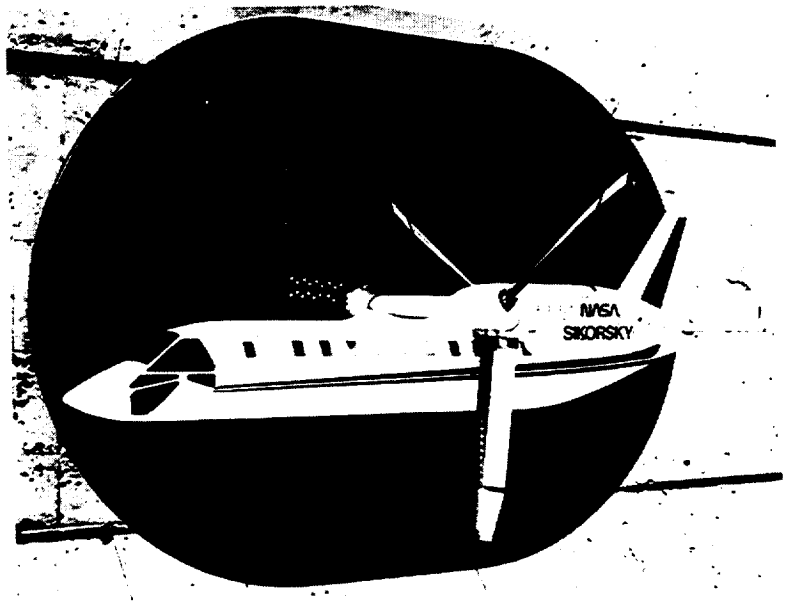

Figure 1. Variable Diameter Tiltrotor Model

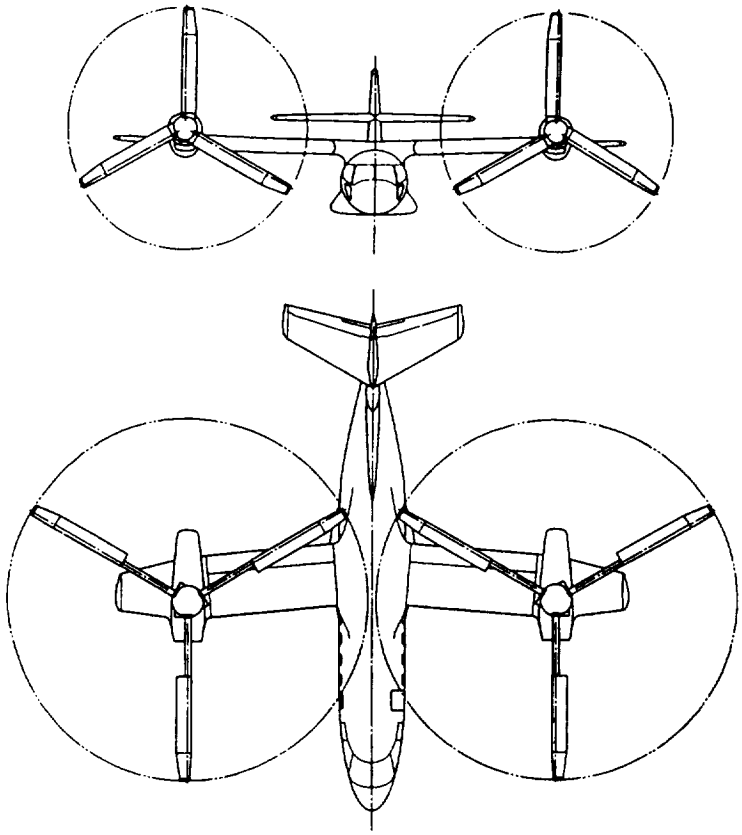

Figure 2. Schematic of a Civil VDTR Transport

Rotor Blades

The three-bladed rotor system has a maximum extended rotor diameter of 8.2 ft and a minimum retracted rotor diameter of 5.4 ft which corresponds to a 34 percent diameter reduction. Rotor construction applies state-of-the-art blade fabrication techniques as well as incorporates a proven design jackscrew retraction/extension mechanism. The blades were fabricated principally from carbon fiber, fiberglass, and foam. Segmented tungsten counterweights were installed in the leading edge of the blade to obtain quarter chord balance. The rotor blades utilize a tapered tip outboard of the 85 percent extended blade radius, cambered airfoils, and 31° twist.

The major components which comprise the variable diameter blade include the torque tube, the outboard blade section, the jackscrew, the nut assembly and the tension straps. The torque tube carries the blade bending moments to the hub structure and transmits blade pitch motion. Furthermore, it provides a track on which to slide the outer blade. The

outer blade section provides the major portion of the rotor thrust and the torque tube has a cambered cross section to maximize its contribution to rotor thrust. The VDTR model blade design is illustrated in Figure 3.

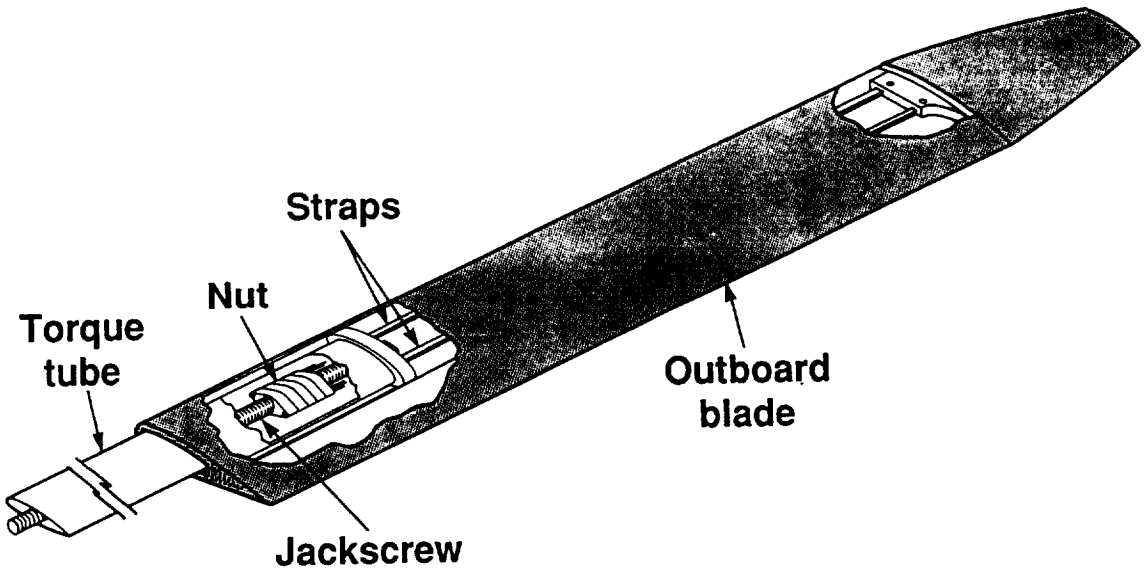

Figure 3. Model Blade Design Schematic

A simple and reliable jackscrew arrangement is located within the torque tube structure to accommodate diameter variation. Rotation of this jackscrew imparts a linear extension or retraction to the nut assembly, and through a series of tension straps, to the tip of the outer blade. The extension/retraction mechanism controls the position of the outer blade section and carries all the centrifugal force of the blade except that generated by the torque tube. A redundant strap located in the center of the jackscrew is incorporated as a safety feature. The redundant strap is capable of withstanding over three times the full centrifugal force of the blade at normal RPM. The jackscrew and torque tube are restrained at the blade root end by a cuff assembly which contains the bearing packages that accommodate blade pitch and jackscrew rotation.

Rotor Head

The model's gimballed hub is illustrated in Figure 4. The model had a simplified actuation mechanism for the jackscrew gears using an electrical motor, mounted under the rotor's aerodynamic spinner, to actuate the jackscrew mechanism for blade extension and retraction. This reversible motor had a braking mechanism built in to provide rapid start-up and stopping of the jackscrews. A universal joint linked the root end of the jackscrew to the pinion gear and accommodated 1.5 degrees of precone as well as a prelag of approximately 0.4 in. A conventional swashplate control system was utilized consisting of rotating pushrods, scissors, swashplate assembly, and stationary actuators. Rotor torque was delivered via a mechanical link torque drive. Three links were used to provide a constant speed universal joint action for the gimbal. Flexibility is built into these links with elastomeric shims to accommodate their extension and compression as the shaft rotates with gimbal tilt. These elastomeric shims are sized to accommodate steady loads due to drive torque as well as vibratory loads imposed by extension and compression of the links during gimbal tilt. To provide the desired gimbal hub stiffness twelve steel loop springs were arranged around the azimuth of the hub. The model hub was mounted directly to a six-component rotating balance on the rotor drive shaft.

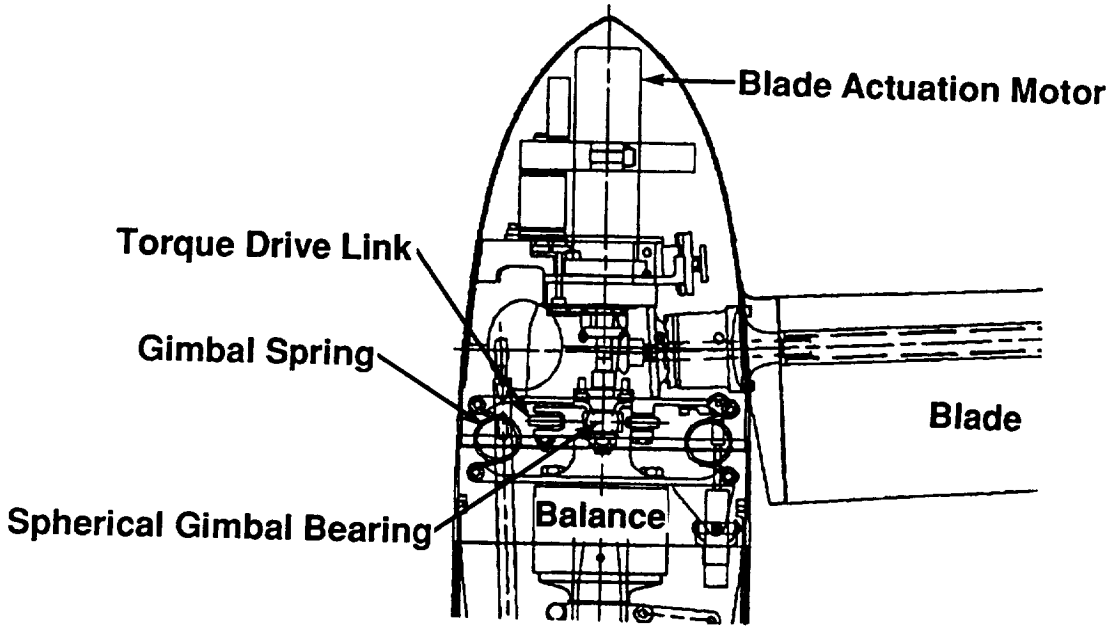

Figure 4. Model Hub Schematic

Model Frame and Drive System

The model frame consisted of a semi-span test rig representing a fuselage with a rigid wing supporting a nacelle which accommodated the rotor's tilting degree of freedom. A reflection plane was mounted on the aircraft plane of symmetry as illustrated in Figure 5. A 30 HP hydraulic motor mounted in the stand pipe drove the rotor system through a drive shaft. The drive shaft passed through the wing to the tilting nacelle at the wing tip. The wing was essentially rigid so that experimental investigation could concentrate on the dynamics and performance of the rotor alone.

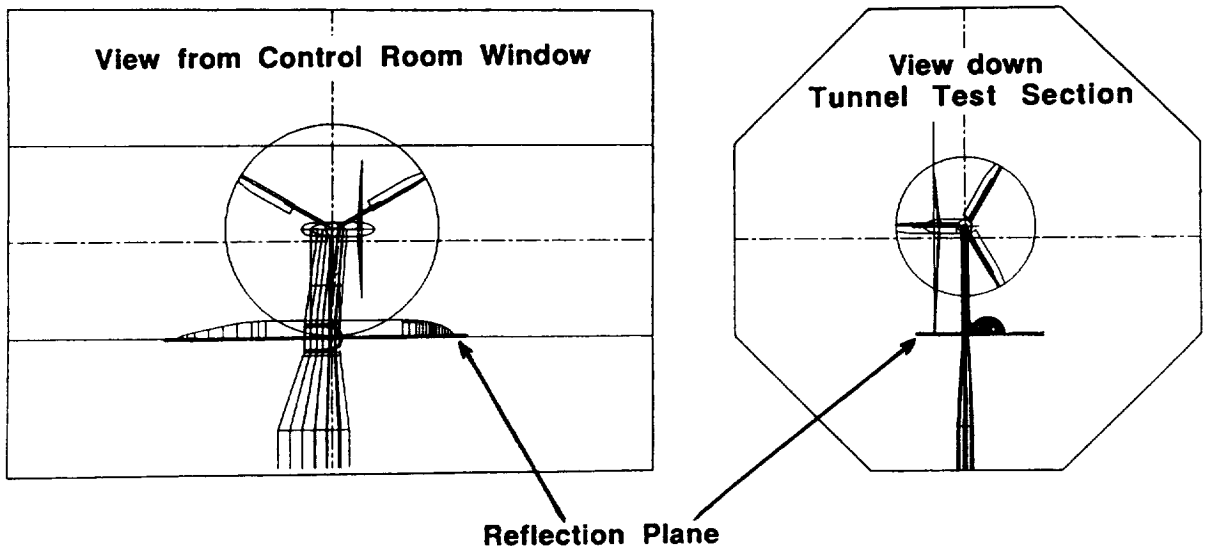

Figure 5. VDTR Model Installation in the LSWT

FACILITY DESCRIPTION

The United Technologies Research Center Large Subsonic Wind Tunnel (LSWT) illustrated in Figure 6 is a single return, closed throat facility with three interchangeable test sections consisting of 8 and 18 foot octagonal sections and a 10x15 foot rectangular section. Maximum speeds are near sonic in the 8 foot test section, approximately 175 knots in the 18 foot test section, and approximately 290 knots in the 10x15 foot test section. The

subject test used the 18 foot test section at a maximum speed of 161 knots. The tunnel is run at atmospheric stagnation pressure and the stagnation temperature is maintained between 60 and 140 degrees F by means of large air exchanger valves in the circuit. A six-component null seeking electrical balance is located in the balance chamber beneath the test section floor and balance loads are resolved about a point at the center of the test section.

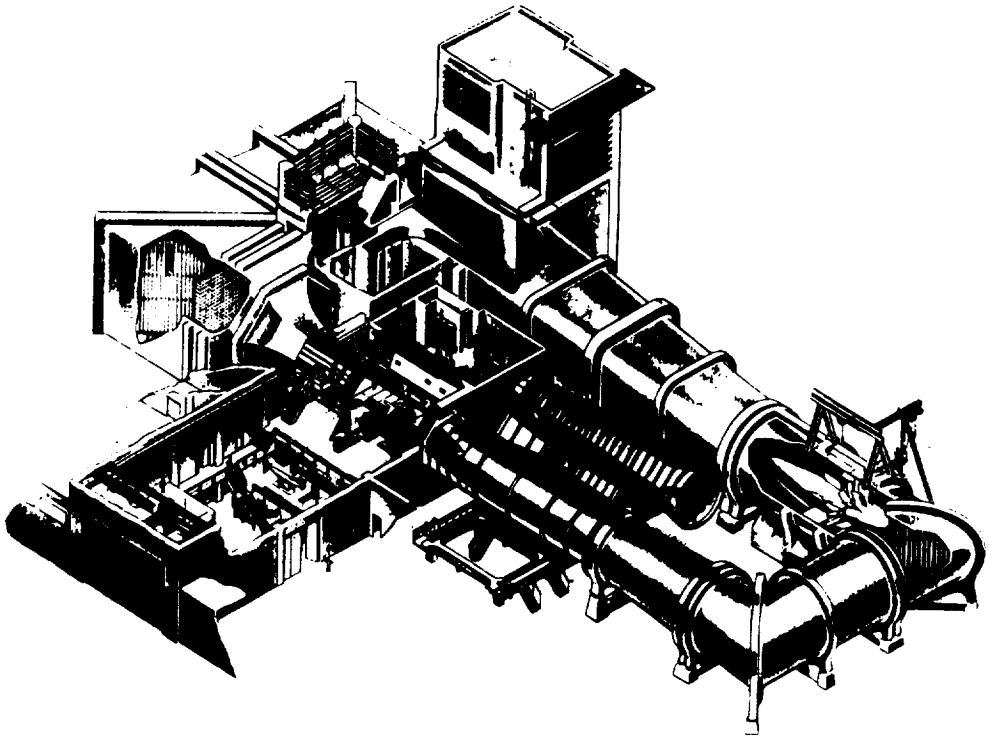

Figure 6. UTRC LSWT Facility

DATA ACQUISITION AND PROCESSING

Data acquisition and processing for this test was provided by a combination of several systems. The UTRC Wind Tunnel Steady-State System was used to set wind tunnel operating conditions and to acquire data from the wind tunnel balance. This balance measured the time-averaged forces and moments of the combination of the rotor plus nacelle plus wing. These measurements did not take into account aerodynamic forces and moments on the fuselage. The UTRC Unsteady Aerodynamics Data System was used to acquire and process data from the model instrumentation.

Analog signal conditioning was provided by a 64 channel Sikorsky NEFF system. All signals were low-pass filtered by the NEFF to avoid aliasing. As shown by the amplitude and phase transfer functions in Figures 7a&b, the filters had a cutoff frequency of 183 Hz. Time resolved unsteady data were acquired for the 43 channels shown in Table 1. The signals were digitized at a rate of 32 samples/rotor revolution, a rate of approximately 420 Hz at the design RPM of 792. Data acquisition was clocked by a shaft optical encoder and synchronized by a one per revolution pulse. The synchronizing pulse occurred when blade one, the strain gage instrumented blade, was right horizontal (0 deg azimuth) in the cruise position (0 deg nacelle tilt). Because the optical encoder was located below the transmission, its position relative to the blade changed with nacelle tilt. In the hover position (90 deg nacelle tilt) the synchronizing pulse occurred when blade one was pointed down at -45 deg azimuth. This shift was corrected for in the data system software for all ensemble averaged signals. (Note that unaveraged ASCII data files and resulting FFT phase printouts do not account for this shift. It is simply tabulated for each data point.) At each test point, the measured channels were simultaneously sampled for 64 contiguous rotor revolutions, using a 15 bit Preston GMAD-1A analog-to-digital converter.

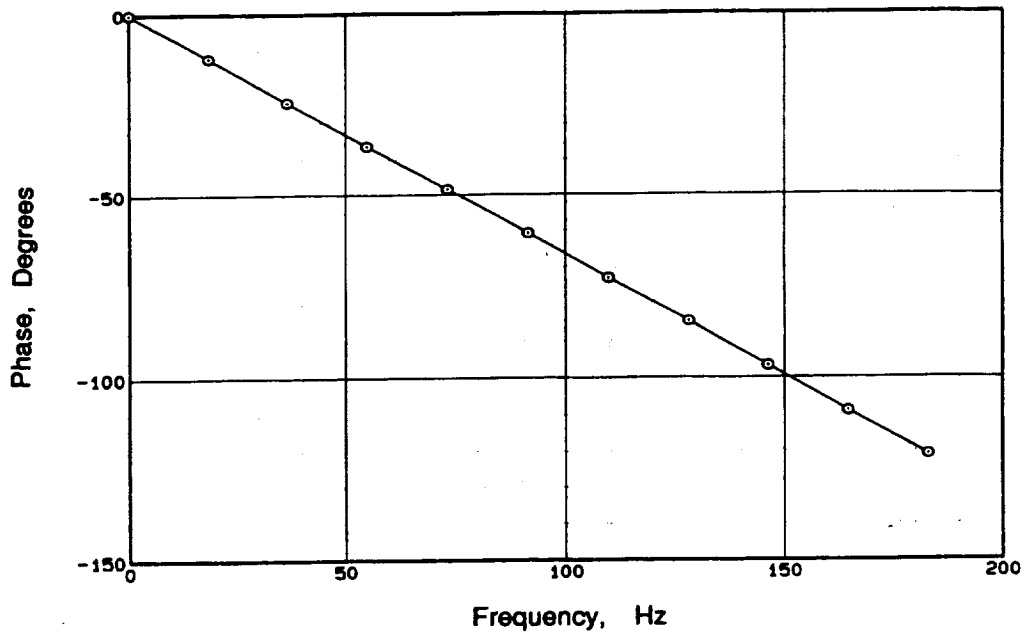

Figure 7a. NEFF Filter Phase Response

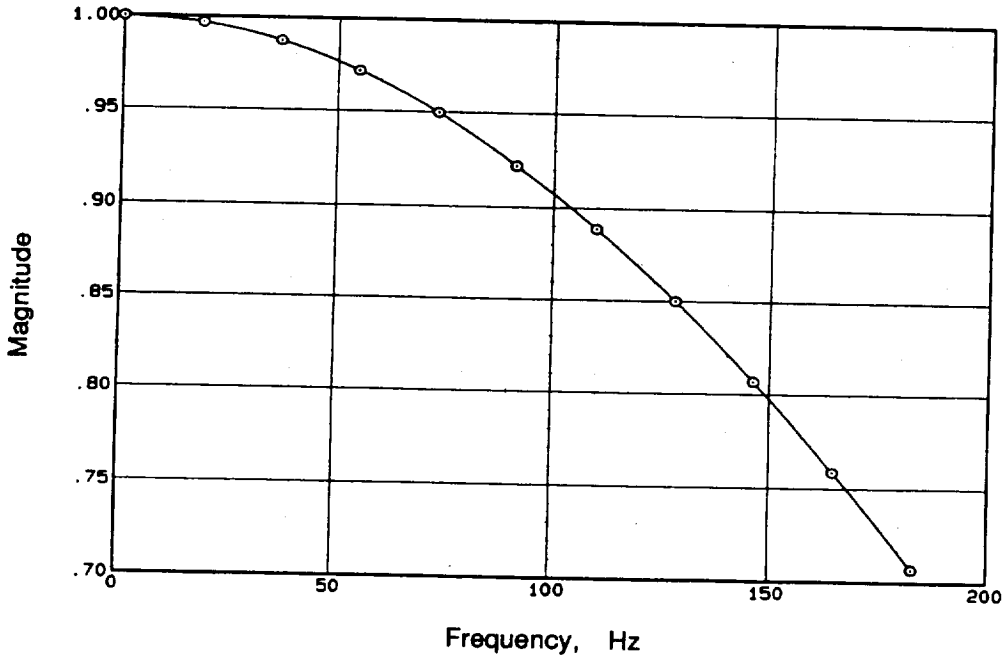

Figure 7b. NEFF Filter Amplitude Response

Table 1. Acquired Unsteady Signals for the VDTR Model

#	Name	Description	Location	Units
01	BALANCE_FX	Rotor Balance Fx	Balance Center	lb
02	BALANCE_FY	Rotor Balance Fy	Balance Center	lb
03	BALANCE_FZ	Rotor Balance Fz	Balance Center	lb
04	BALANCE_MX	Rotor Balance Mx	Balance Center	ft-lb
05	BALANCE_MY	Rotor Balance My	Balance Center	ft-lb
06	BALANCE_MZ	Rotor Balance Mz	Balance Center	ft-lb
07	ACCEL_X1	Gearbox Accelerometer	x=-0.95, y=1.35, z=2.1 inch	g

Table 1 (Continued).
Acquired Unsteady Signals for the VDTR Model

#	Name	Description	Location	Units
08	ACCEL_Y2	Gearbox Accelerometer	x=-1.35, y=-.95, z=2.1 inch	g
09	ACCEL_Z3	Gearbox Accelerometer	x= 1.40, y=1.40, z=2.03	g
10	ACCEL_X4	Gearbox Accelerometer	x= 1.60, y=0.90, z=-2.9	g
11	ACCEL_Y5	Gearbox Accelerometer	x= 1.20, y=0.50, z=-2.9	g
12	ACCEL_Z6	Gearbox Accelerometer	x=-1.75, y-1.72, z=-3.4	g
14	ROTOR_DIA	Rotor Diameter		%
15	PITCH	Blade 1 pitch wrt Gimbal		deg +nose up
16	PUSHROD1	Pushrod for Blade 1		lb +tension
17	PUSHROD2	Pushrod for Blade 2		lb
18	PUSHROD3	Pushrod for Blade 3		lb
19	ACTUATOR1	Swashplate actuator #1		in +extend
20	ACTUATOR2	Swashplate actuator #2		in
21	ACTUATOR3	Swashplate actuator #3		in
22	SWASHP_COL	Swashpl. Collective (Meas.)		deg +nose up
23	SWASHP_A1S	Swashpl. Cyclic A1S (Meas.)		deg
24	SWASHP_B1S	Swashpl. Cyclic B1S (Meas.)		deg.

Table 1 (Completed).
Acquired Unsteady Signals for the VDTR Model

#	Name	Description	Location	Units
25	GIMBAL1	Gimbal Tilt at Blade 1		deg. +flap up
26	GIMBAL2	Gimbal Tilt at Blade 2		deg. +flap up
27	GIMBAL3	Gimbal Tilt at Blade 3		deg. +flap up
28	NACELLE_T	Nacelle Tilt		deg.
29	STR_FLT_0492	Blade 1 strain gage	Flatwise r=4.92in.	in-lb +up
30	STR_EDG_0492	Blade 1 strain gage	Edgewise r=4.92in	in-lb +aft
31	STR_TOR_0492	Blade 1 strain gage	Torsion r=4.92in.	in-lb +nose up
32	STR_FLT_1230	Blade 1 strain gage,	Flatwise, r=12.30in.	in-lb +up
33	STR_EDG_1230	Blade 1 strain gage,	Edgewise, r=12.30in.	in-lb +aft
34	STR_TOR_1230	Blade 1 strain gage,	Torsion, r=12.30in.	in-lb +nose up
35	STR_FLT_1968	Blade 1 strain gage,	Flatwise, r=19.68in.	in-lb +up
36	STR_EDG_1968	Blade 1 strain gage,	Edgewise, r=19.68in.	in-lb +aft
37	STR_TOR_1968	Blade 1 strain gage,	Torsion, r=19.68in.	in-lb +nose up
38	STR_FLT_2608	Blade 1 strain gage,	Flatwise, r=26.08in.	in-lb +up
39	STR_EDG_2608	Blade 1 strain gage,	Edgewise, r=26.08in.	in-lb +aft
40	STR_TOR_3198	Blade 1 strain gage,	Torsion, r=31.98in.	in-lb +nose up
41	STR_FLT_3690	Blade 1 strain gage,	Flatwise, r=36.90in.	in-lb +up
42	STR_EDG_3690	Blade 1 strain gage,	Edgewise, r=36.90in.	in-lb +aft
43	RPMUNST	Rotor RPM		RPM

A second A-D system was used to acquire steady parameters, which included the wind tunnel total and static pressures, total temperature, dewpoint, rotor RPM, and the internal pressure of the model nacelle. This data acquisition was controlled by a Perkin Elmer (now Concurrent Computer) 3230 processor. The computer was configured with 16 MB of internal memory, 1200 MB of disk storage, a 6250 BPI 9-track tape drive, 10 terminal lines, a text printer, and a graphics laser printer. The data acquisition software consisted of eleven individual program running simultaneously and communicating by means of shared memory and inter-task messages. Data were acquired by two separate programs. The TRIMSAFE program ran throughout the test, acquiring short bursts of data and displaying them on screens at the pilot's station and at the data acquisition station. The displayed information was used to set test conditions and ensure that safety limits were not exceeded. The ACQUIRE program controlled acquisition of data points. For each of the more than 1200 data points, the digitized data was stored on disc, archived to magnetic tape, and processed for on-line display. Many of the on-line applications used the 32 sample ensemble average formed by averaging the samples acquired at the same azimuth during the 64 rotor revolutions.

The acquired data channels are listed in Table 1. Blade angles relative to the gimbal were measured by a pitch potentiometer on blade 1 (identified as PITCH in Table 1). The swashplate angles (SWASHP_COL, _A1S, _B1S) describe the swashplate position in the fixed frame. A correction is applied to the averaged measured blade pitch potentiometer and swashplate collectives to obtain the collective at 75% of the current rotor diameter, since the unsteady signals (PITCH and SWASHP_COL) are calibrated in terms of 75% of the maximum rotor diameter. The correction is equal to 0.284 deg per % that the diameter is less than 100%. The individual swashplate actuator positions were also measured and recorded at ACTUATOR1, 2, and 3. Potentiometers were also used to measure the instantaneous nacelle tilt (NACELLE_T) and rotor diameter (ROTOR_DIA). The rotor diameter pot suffered from severe slippage, so the rotor diameter was usually entered manually into the data acquisition system.

Three gimbal tilt potentiometers (identified as GIMBAL1, 2, 3 in Table 1) indicate the flapping motion of the hub at each blade. The hub is perpendicular to the shaft when all three gimbal tilts are zero. A positive reading corresponds to flapping up at the blade. The gimbal tilts were resolved into the x and y balance axes (Fig. 8a) to obtain GIMBAL_X_ROT and GIMBAL_Y_ROT, shown in Table 2. GIMBAL_X_FIX and

GIMBAL_Y_FIX represent the fixed frame gimbal position. A positive GIMBAL_X corresponds to a flap up of the balance x axis. GIMBAL_Z_SUM is the sum of the GIMBAL1,2,3, and should remain zero for perfect calibration and without drift. When nonzero, it illustrates the degree of accuracy in the gimbal tilt measurements. GIMBAL_BETA (Table 2) is the same as GIMBAL1 (Table 1), and is the flapping motion of the reference instrumented blade.

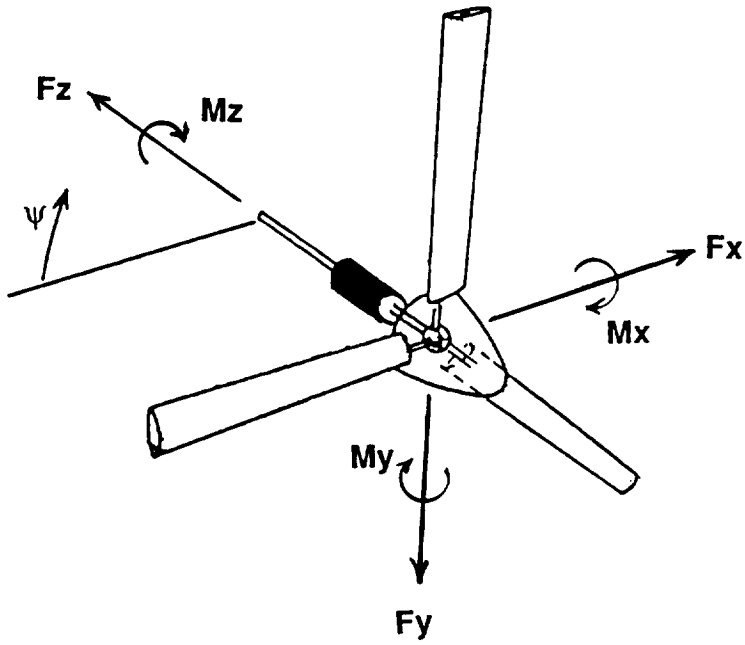

Figure 8a. Rotating Hub Shaft Axes Convention

Table 2 . Computed Unsteady Signals for the VDTR Model.

#	Name	Description	Units
01	FX_HUB_ROT	Fx, Rotating Sys, Hub axes	lb
02	FY_HUB_ROT	Fy	lb
03	FZ_HUB_ROT	Fz	lb
04	MX_HUB_ROT	Mx	ft-lb
05	MY_HUB_ROT	My	ft-lb
06	MZ_HUB_ROT	Mz	ft-lb
07	FX_HUB_FIX	Fx, Fixed System, Hub Axes	lb
08	FY_HUB_ROT	Fy	lb

Table 2 (Continued).
Computed Unsteady Signals for the VDTR Model.

#	Name	Description	Units
09	FZ_HUB_ROT	Fz	lb
10	MX_HUB_ROT	Mx	ft-lb
11	MY_HUB_ROT	My	ft-lb
12	MZ_HUB_ROT	Mz	ft-lb
13	GIMBAL_Z_SUM	GIMBAL1+GIMBAL2+GIMBAL3	deg
14	GIMBAL_X_ROT	Gimbal Tilt of x axis, Rotating Sys	deg
15	GIMBAL_Y_ROT	Gimbal Tilt of y axis, Rotating Sys	deg
16	GIMBAL_X_FIX	Gimbal Tilt of x axis, Fixed System	deg
17	GIMBAL_Y_FIX	Gimbal Tilt of y axis, Fixed System	deg
18	GIMBAL_BETA	Blade 1 Flapping Angle (=GIMBAL1)	deg
19	ACCEL_AX	x axis trans. accel, nacelle axes	g
20	ACCEL_AY	y axis	g
21	ACCEL_AZ	z axis	g
22	ACCEL_RX	x axis rotational acceleration	rad/sec2
23	ACCEL_RY	y axis	rad/sec2
24	ACCEL_RZ	z axis	rad/sec2
25	ACCEL_G_AX	x axis trans. accel, global axes	g
26	ACCEL_G_AY	y axis	g
27	ACCEL_G_AZ	z axis	g
28	ACCEL_G_RX	x axis rotational acceleration	rad/sec2
29	ACCEL_G_RY	y axis	rad/sec2
30	ACCEL_G_RZ	z axis	rad/sec2

Table 2 (Completed).
Computed Unsteady Signals for the VDTR Model.

#	Name	Description	Units
31	DISPL_G_AX	x axis trans displacement, global axes	in.
32	DISPL_G_AY	y axis	in.
33	DISPL_G_AZ	z axis	in.
34	DISPL_G_RX	x axis rotational displacement	deg
35	DISPL_G_RY	y axis	deg
36	DISPL_G_RZ	z axis	deg

In addition to measuring the averaged rotor RPM as part of the steady-state acquisition system, the time variation of the RPM was determined by counting the number of 1024 per revolution pulses every 0.1 seconds during acquisition of each data point. This information was converted into an equivalent sequence of RPM values at each data acquisition time and inserted as an additional acquired unsteady signal, RPMUNST.

A rotating balance was installed between the rotor shaft and the rotor hub to measure rotor forces and moments in three directions. The balance element load data (BALANCE_FX...BALANCE_MZ in Table 1) represent the loads measured by each strain gage bridge in engineering units (lb or ft-lb), in the balance axes system (Fig. 8b), resolved to the balance center, and with sensitivities based upon check loads performed with the model installed in the wind tunnel. The balance element loads are relative to the 'zero' loads measured at zero wind velocity, zero rotor RPM, and with the blades at the 'reference position', blade 1 right horizontal. The balance element loads are transformed into the rotating hub loads by applying two matrices. The first is the balance element interaction matrix, which was supplied by the manufacturer, and is approximately diagonal. The second is the resolving point transfer matrix, which converts from internal balance axes to standard Sikorsky axes, as shown in Fig. 8a, and evaluates the loads at the rotor hub center, 4.2 in. up the shaft from the balance. Rotor gravity tares (approximately 22 lb of Fy force in the fixed frame) were subtracted from the rotating Fx and Fy balance loads, producing the loads listed in Table 2 as FX_HUB_ROT...MZ_HUB_ROT. These loads were converted from the rotating to fixed frame, producing the loads listed in Table 2 as FX_HUB_FIX...MZ_HUB_FIX.

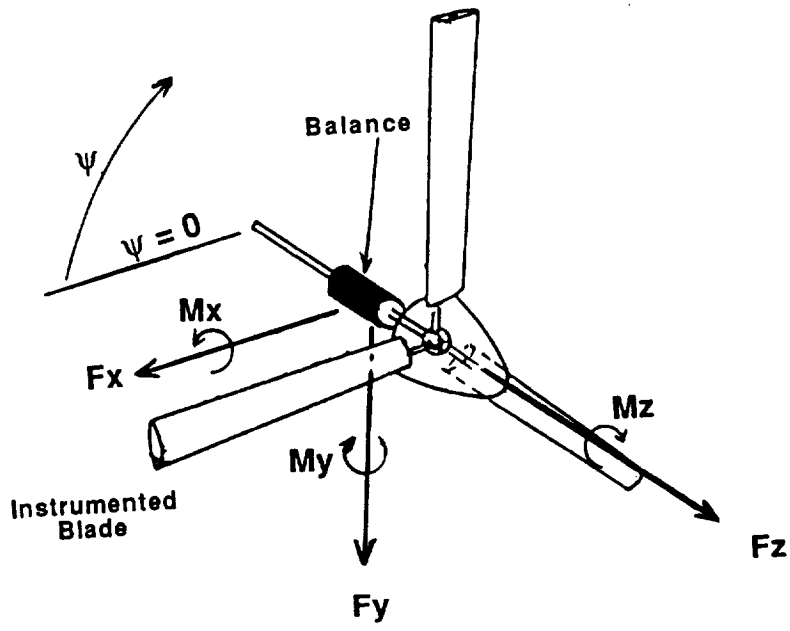

Figure 8b. Rotating Balance Element Axes Convention

The fixed frame loads were time-averaged over the revolution. Aerodynamic tares for all six components were subtracted at this stage, giving fixed frame rotor loads in the shaft axis system, resolved to the rotor hub. The aerodynamic tares were based on loads measured for the spinning hub without blades. For nonzero nacelle angles (hover and transition modes), the tares were obtained by interpolation of measured loads at nacelle angles between 0 and 90 deg, and were scaled by wind tunnel dynamic pressure. At zero nacelle angle (cruise mode), the tares were obtained by interpolation of measured loads over the entire range of wind tunnel dynamic pressure. Measured loads on the three push rods (blade pitch links) were added to the shaft thrust, Fz, measured by the rotor balance to obtain the rotor thrust.

The basic set of six time-averaged forces and moments in the fixed frame shaft axis system, shown in Fig. 8a, were also transferred to several other axes. Gimbal axis forces (MX_GIM...MZ_GIM, Figure 8c) were obtained parallel to the average gimbal tilt by translating the resolving point because the gimbal is 1.662 in. down the shaft from the hub, and rotating the loads parallel to the gimbal. Control axis forces (T_FORCE, H_FORCE, and Y_FORCE) were obtained by rotating the loads parallel to the measured

swashplate angles. Wind axis loads (LIFT, DRAG, SIDE FORCE and MOMENTS, Figure 8d) were obtained by rotating the shaft axis loads parallel to the corrected wind direction. The wind tunnel wall correction angle was based on a uniform downwash velocity computed from momentum theory. The wind axis loads were also translated to the fuselage reference point used by the wind tunnel balance.

A correction to the wind tunnel static pressure to account for solid and wake blockage of the model and support system was computed, and all wind tunnel conditions were revised accordingly. Nondimensional load coefficients using both helicopter and propeller terminology were computed from the measured loads and operating conditions. Helicopter load parameters included CT/σ, CQ/σ, CL/σ, etc., with σ corrected for the current rotor diameter. Also computed were figure of merit in hover, and the lift to equivalent drag ratio and rotor propulsive force coefficient in forward flight modes. Propeller parameters included thrust, torque, and power coefficients, and the propulsive efficiency.

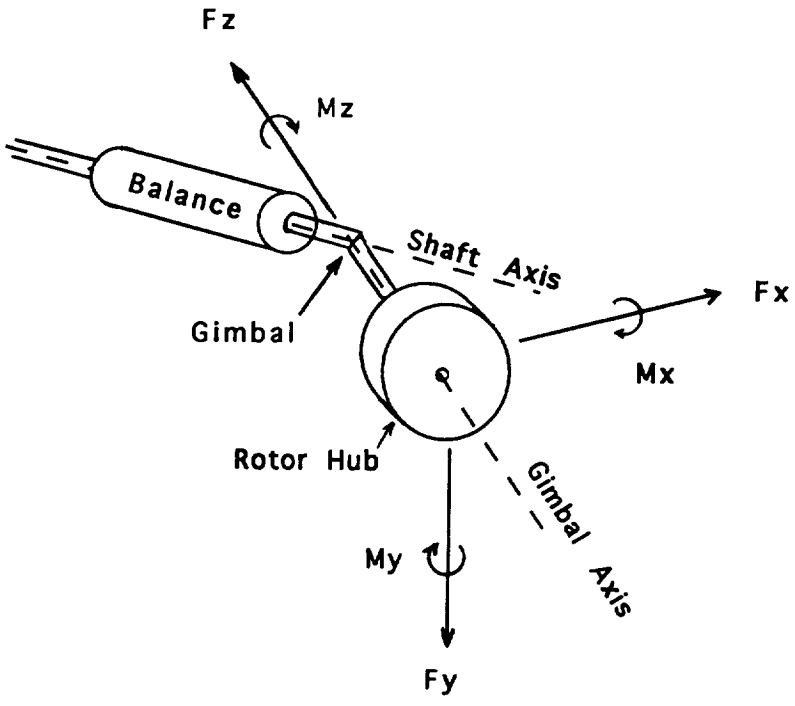

Figure 8c. Hub Gimbal Axes Convention

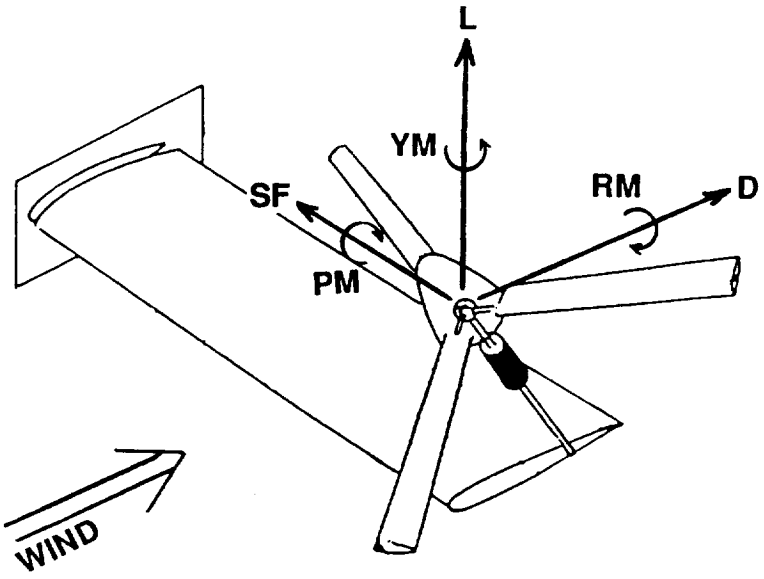

Figure 8d. Hub Wind Axes Convention

MODEL INSTRUMENTATION

Fourteen blade strain gages were monitored during the test. As listed in Table 1, flatwise, edgewise, and torsional loads were measured at six locations on a single blade, number 1. Sensitivities were determined by applying physical loads to the installed blade. All measurements were relative to the steady 'zero' loads at the reference position, blade 1 horizontal. No corrections were applied to account for load interactions between the gages or for blade deflections during calibration.

Model accelerations were measured using six accelerometers mounted on the nacelle gearbox (transmission). The individual accelerometer outputs are listed in Table 1 as ACCEL_X1...ACCEL_Z2. The location of each accelerometer is also given in Table 1, and the accelerometer coordinate system is shown in Figure 9a. The origin of coordinates is the intersection of the rotor shaft axis and the shaft tilt axis. Note that these axes differ from the balance axes, Figures 8a-d, in both location and labelling. From the six individual outputs, translational and rotational accelerations about each axis can be computed, as listed in Table 2 (ACCEL_AX...ACCEL_RZ).

These accelerations were further rotated from the nacelle coordinate system (which rotates with the nacelle) to a global coordinate system (Figure 9b), where the z axis always points forward (global and nacelle coordinates match at zero nacelle angle). These accelerations are listed as ACCEL_G_AX...ACCEL_G_RZ in Table 2. Model displacements were obtained from the global accelerations by double integration in the time domain.

For the ensemble averaged data, a centered second order difference equation was solved subject to conditions of periodicity and zero average displacement. For unaveraged data, a time-marching Runge-Kutta approach was used, starting an initial condition of zero velocity and displacement, and then subtracting out the averaged velocity and displacement at the end. This approach was not fully satisfactory, since very small amplitude accelerations at low frequency often produce much larger displacements than the higher frequency components of interest. A digital filtering technique to eliminate the lower frequencies was implemented, but not extensively used because of the large amount of computer processing time required.

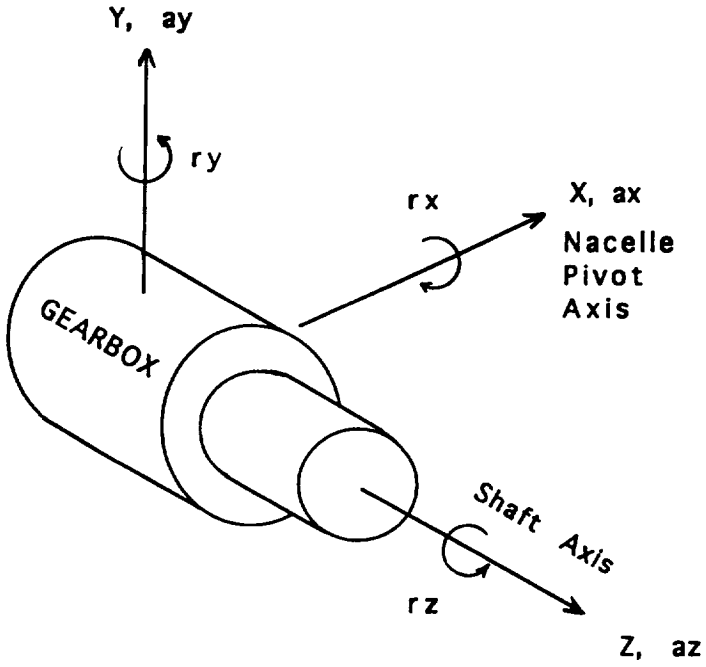

Figure 9a. Gearbox Accelerometer Coordinates

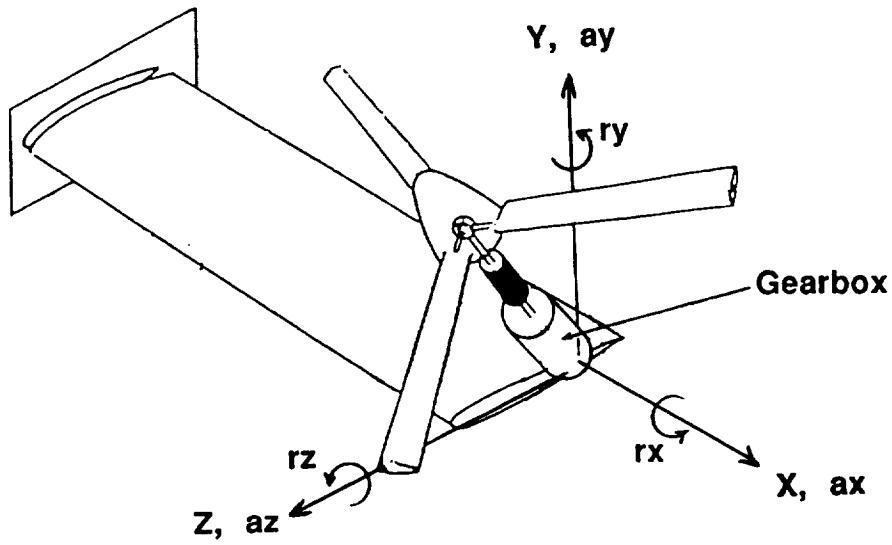

Figure 9b. Global Accelerometer Coordinates

The unaveraged data files were made available at the conclusion of each test point for use by the Sikorsky-developed Transient Spectral Stability Analysis (TSSA) program, which could display both time and frequency domain plots of any acquired (Table 1) or computed (Table 2) channel, and which could also use a moving block analysis to determine damping coefficients for modes of interest.

Several other plotting and printout programs were also used to examine the acquired data. Performance data were plotted by the program PERFTILT. After each point it updated video screens containing performance coefficient data. Time histories and spectra of individual acquired and computed quantities could be displayed using program PLOTTILT. A printout of each set of test conditions was generated by program TILTPRIN. This printout contained test conditions, averaged performance data, and tables of the mean, peak-to-peak, and Fourier amplitude and phase of selected quantities. This information could also be transferred using a serial line to a personal computer (IBM 486 compatible) and imported into the EXCEL spread-sheet software package.

TEST PROCEDURES

Check loading was performed before and after the test for the model's internal rotating balance and blade gages. Gravity tares and aerodynamic hub tares were taken prior to testing. The tare data generated for the model's rotating balance was automatically processed during the test data acquisition. For the tunnel balance, gravity static moment variation (SMV) tares were acquired in the form of polynomial fitted curves for each model tilt/yaw angle combination as required whenever the model center of gravity was altered. For all SMV runs, start zeroes were acquired with the model at zero degrees tilt and yaw angle. The SMV pitching and rolling moment tare data were acquired over a range of model tilt angles at each fixed yaw angle as dictated by the angle schedules of the planned subsequent data runs. A curve fit procedure was then used to obtain the best fit and to obtain, in this case, the polynomial curve coefficients which were used in the wind tunnel steady state data reduction program.

At the start of any run, data system zeroes were taken and the model run up to a nominal thrust level. The model was then shut down and zeroes taken again for comparison. The model and tunnel were then set to the apppropriate test condition as established by the test plan or the NASA test conductor. Data was acquired by both the model's Perkin Elmer dynamic data system and the tunnel's steady state data system when the model was established at a stable condition.

This wind tunnel test plan was organized to maximize the number of test points for the allotted 40 hour wind tunnel occupancy period. For any given series of test points, commanded control changes were varied prior to changing the tunnel velocity. This is because tunnel velocity stabilization could take up to several minutes, and so velocity changes were minimized. A full range of tunnel velocities were planned for each rotor diameter condition. Rotor diameter changes were kept to a minimum because every rotor diameter change required a tunnel shutdown to accommodate rewiring of the outboard blade strain gages. Eventually, some test points were taken with the outboard gages disconnected after the operating envelope was cleared for the outboard blade loads.

The model was shut down at convenient points throughout the test for inspection of its mechanical, hydraulic and electrical components.

DATA ACQUIRED AND ANALYSIS

Nondimensionalization Convention

It was necessary to adopt certain conventions in presenting the data since the rotor diameter was a variable during this test. The interpretation of rotor force measurements required an unconventional means of nondimensionalization because the rotor diameter varied throughout conversion. This changes the rotor solidity which is normally a constant in rotor performance coefficients. In order to directly compare rotor coefficients regardless of the rotor diameter configuration, performance data here are nondiminsionalized using the fully extended values of radius and solidity (R=49.2 inches and σ=.0856). An asterisk is utilized to denote that this convention is being used. The advantage of using a common base for the data is that direct comparisons of the extended blade conditions (helicopter mode and early conversion) and retracted conditions (late conversion and cruise) may be made.

Propulsive Force Envelope

Significant data were acquired throughout the conversion corridor, as well as for hover and cruise. Figure 10 illustrates the satisfactory range of test points acquired during this test with a plot of nacelle tilt versus equivalent full-scale airspeed. The full-scale airspeed is twice the tunnel velocity as a result of the half tip-speed scaling. Also illustrated in this figure is the demonstrated conversion corridor for both the XV-15 and the V-22 (Refs. 2, 3).

Physical limitations of the model control system resulted in our inability to trim rotor flapping at high velocities and low nacelle tilt angles in conversion. This is evidenced by the lack of points in conversion for velocities beyond 125 knots. This was due to physical limitations of the model control system and not due to any aerodynamic or dynamic limitations of the VDTR. This was a result of physical interference between the push rods and the rotor head which required the model to operate within the cyclic pitch and gimbal tilt "potatoes" illustrated in Figure 11. This limitation was specific to the current model configuration and will be corrected in any future designs.

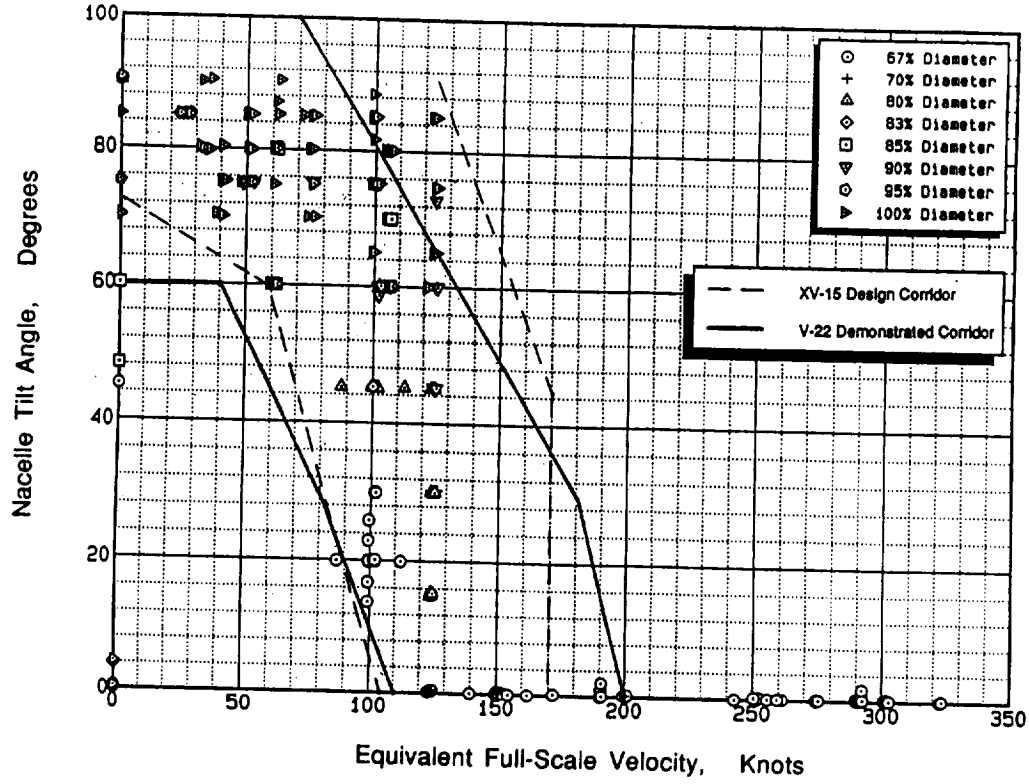

Figure 10. Nacelle Tilt Versus Equivalent Full-Scale Airspeed

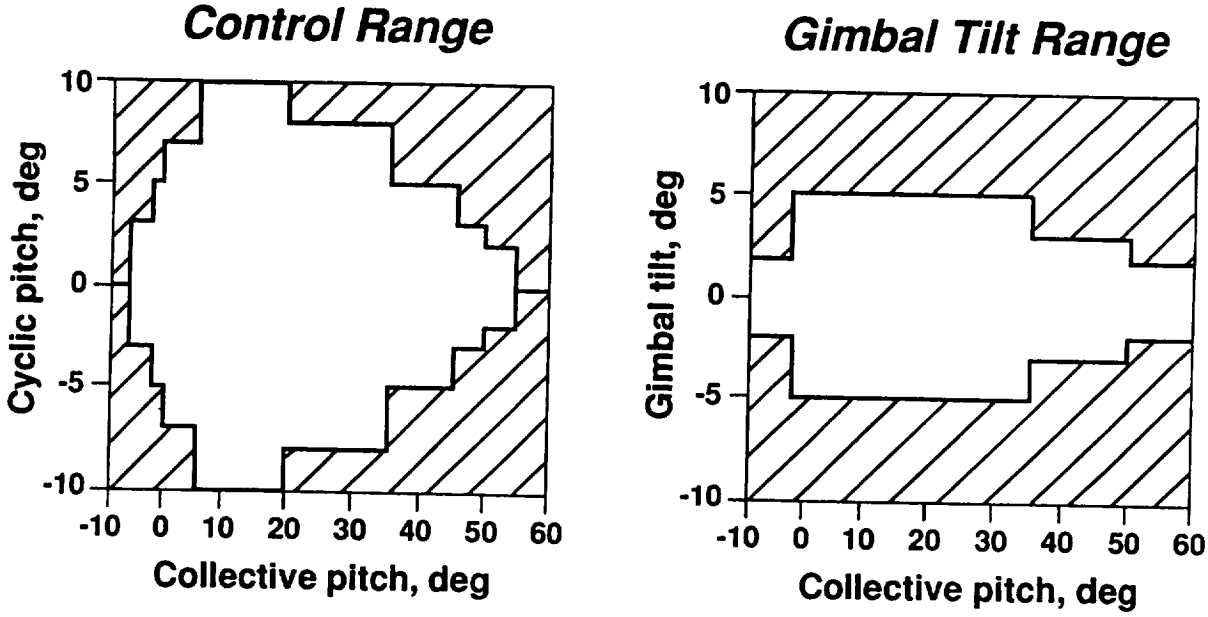

Figure 11. Model Control and Gimbal Tilt Limitations

Figure 12 illustrates the propulsive force measured in conversion in terms of rotor $(C_L/\sigma)^*$ versus rotor $(C_D/\sigma)^*$ for equivalent full-scale velocities of 75, 100, 125 and 150 knots. Negative values of $(C_D/\sigma)^*$ here represent positive propulsive force. Test data reveals that the model is fully converted to the cruise configuration at 150 knots. Boundaries in the lower right of the figure illustrate the limits of $(C_L/\sigma)^*$ and $(C_D/\sigma)^*$ required to sustain flight in conversion for wing C_L's ranging from 0.5 to 1.5. These are reasonable values for tiltrotor wing C_L in conversion. For any point on these boundaries, the $(C_L/\sigma)^*$ and $(C_D/\sigma)^*$ values represent components of the total propulsive force required to sustain flight based on total vehicle drag and wing contribution to lift. Each boundary line establishes propulsive force required over a range of flight velocities. For the C_L = 0.5 boundary, flight velocities range from 100 knots (upper boundary point) to 218 knots (fully converted for cruise). For the C_L = 1.0 boundary, flight velocities range from 100 knots (upper boundary point) to 154 knots (fully converted for cruise). For the C_L = 1.5 boundary, flight velocities range from 100 knots (upper boundary point) to 126 knots (fully converted for cruise). Test results reveal that the VDTR is capable of significantly higher propulsive force than required for conversion.

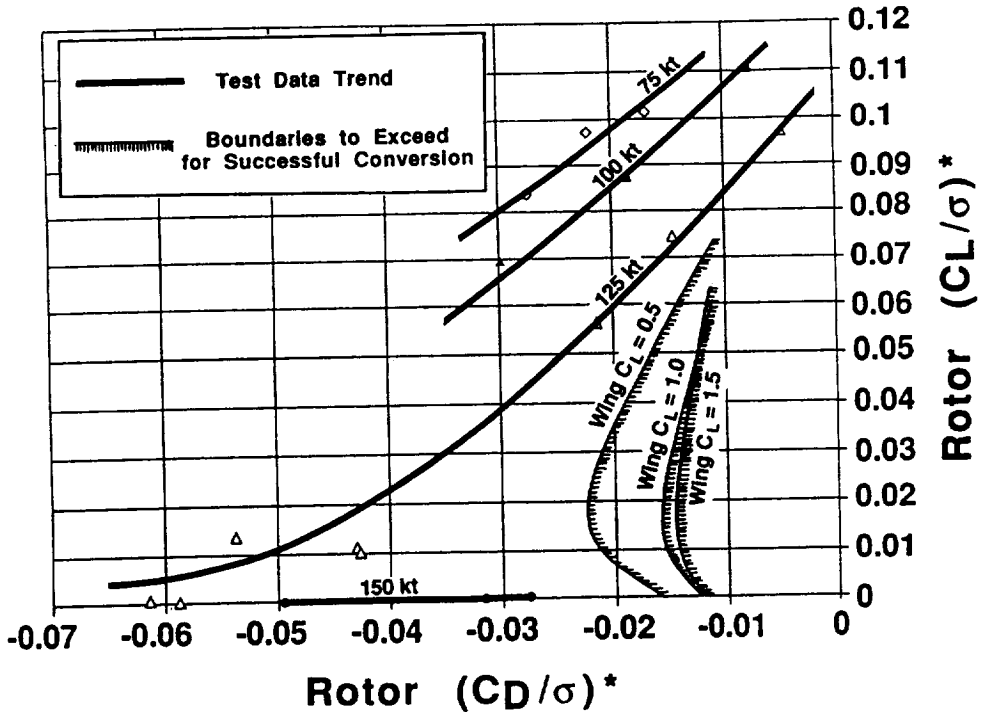

Figure 12. Propulsive Force Demonstrated by VDTR

Model Dynamics

Rotor Properties

Rotor section properties are illustrated in Figures 13 - 21 for the fully extended blade and torque tube structures. Model blade and torque tube flatwise, edgewise, torsion, and axial stiffnesses are illustrated in Figures 13-16. Figure 17 presents the assembled blade spanwise weight distribution. Radial distributions of the chordwise CG location and the elastic axis location are illustrated in Figures 18 and 19, respectively. Blade section torsional weight inertia is illustrated in Figure 20. Blade twist and chord distributions are illustrated in Figures 21 and 22, respectively.

For blade configurations other than the fully extended case, the appropriate section property distributions are achieved by displacing the blade section properties inboard relative to the torque tube section properties. In the overlap region of the blade and torque tube (mid span) the two structures' stiffnesses can be summed since the load path is redundant for bending and torsion moments. Component weights are also summed in the overlap region. Chordwise CG location will remain coincident with the feathering axis (blade 1/4 chord) and the chordwise elastic axis will fall between that of the outer blade and torque tube in the overlap region of the two structures. Torsional weight inertia will sum in the overlap region and twist will decrease linearly as the outboard blade section telescopes inward over the torque tube structure.

Included in the weight distribution is an outer blade leading edge counterweight which is installed to mass balance this outer blade about the quarter chord and feathering axes. All the components are chordwise symmetrical about the feathering axis except the tip block which retains the tension straps (Figure 3). Thus, the entire blade is essentially mass balanced about the quarter chord.

Model rotor hub section properties are listed separately in Table 3. Flatwise, edgewise and axial stiffness as well as hub weight are listed for the center hub section (hub center of rotation to a radial location of 1.05 inches) and for the hub pitch bearing assembly (radial location of 1.05 inches to 3.12 inches)

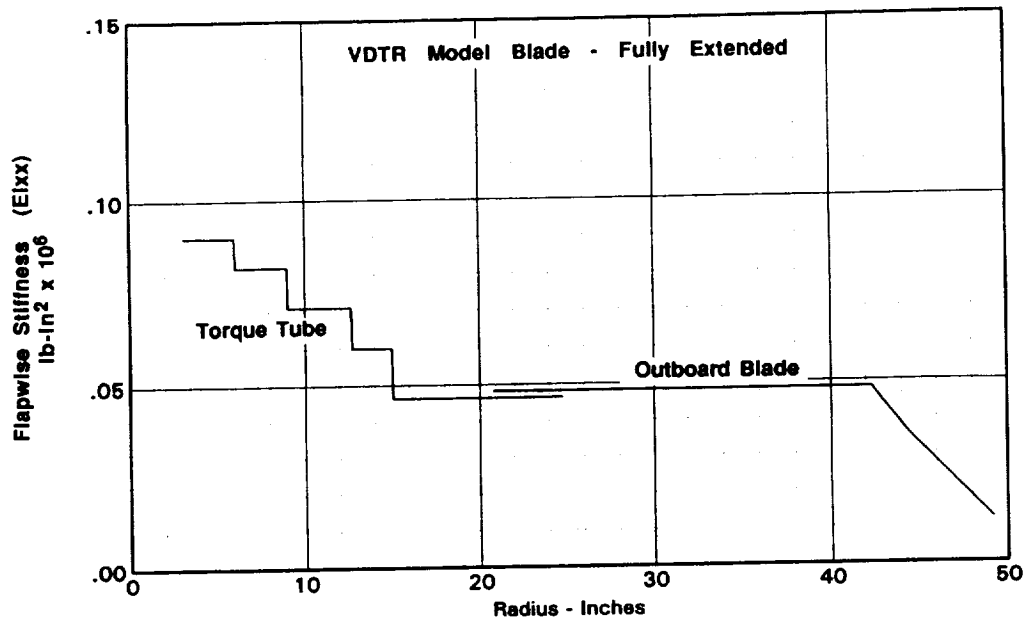

Figure 13. Model Blade Flatwise Stiffness Distribution

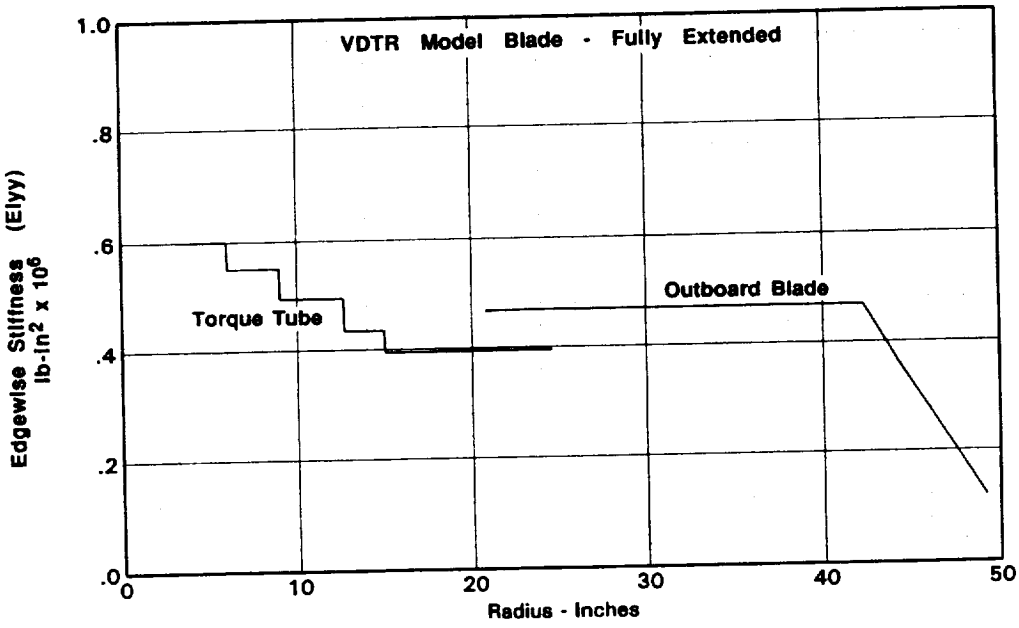

Figure 14. Model Blade Edgewise Stiffness Distribution

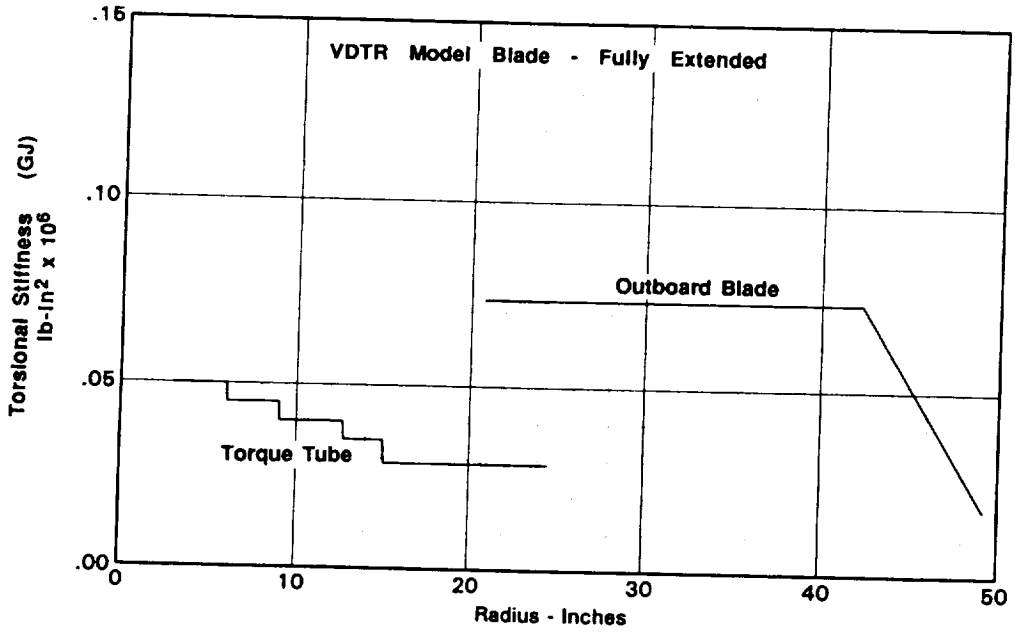

Figure 15. Model Blade Torsional Stiffness Distribution

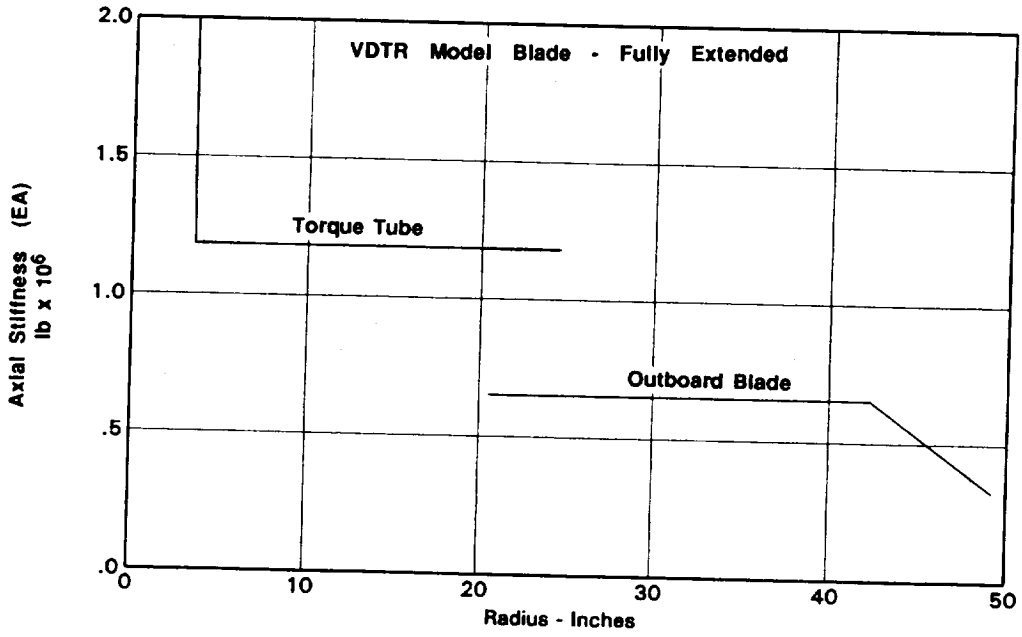

Figure 16. Model Blade Axial Stiffness Distribution

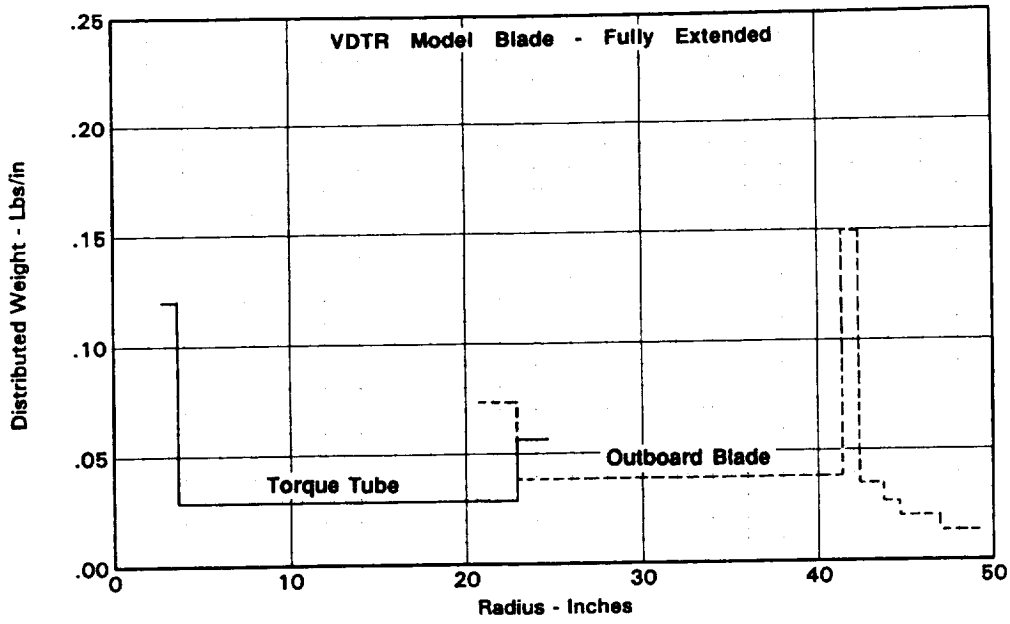

Figure 17. Model Blade Weight Distribution

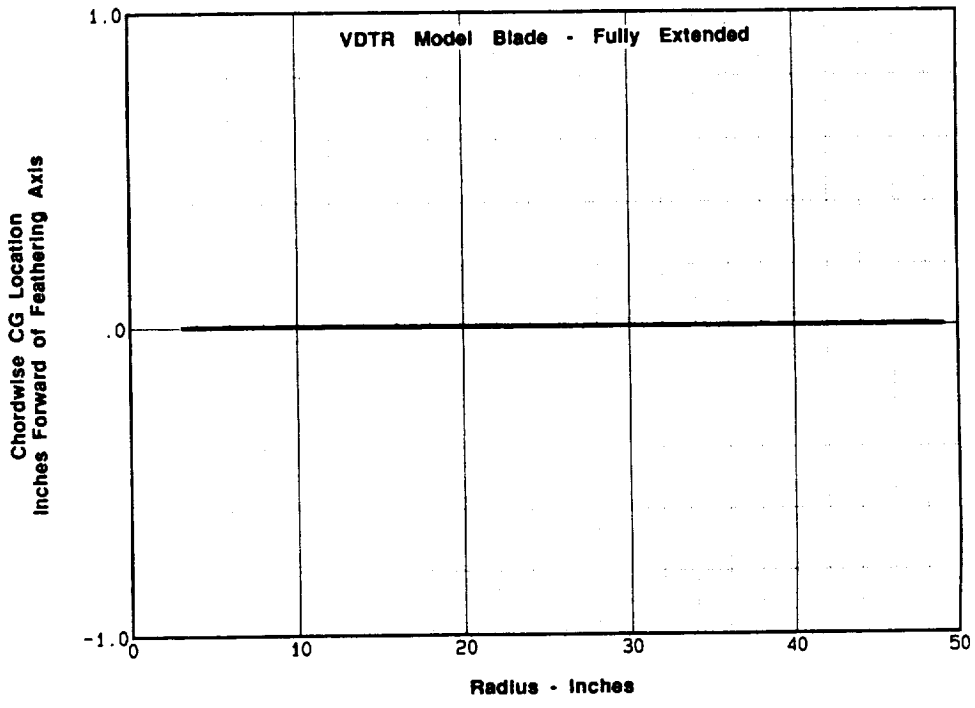

Figure 18. Model Blade Chordwise CG Distribution

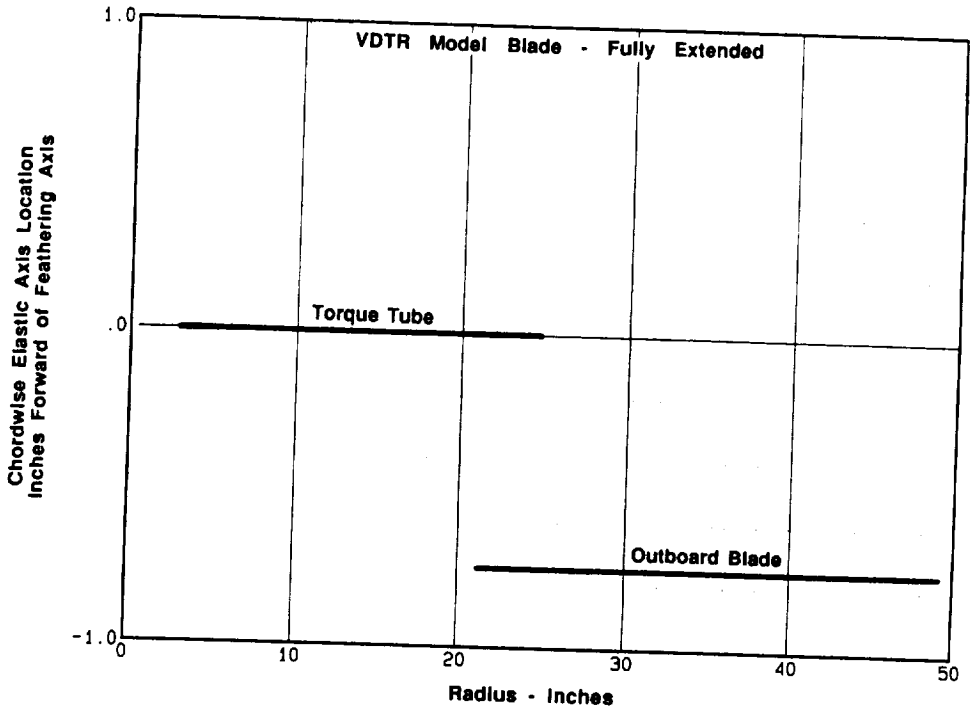

Figure 19. Model Blade Chordwise Elastic Axis Distribution

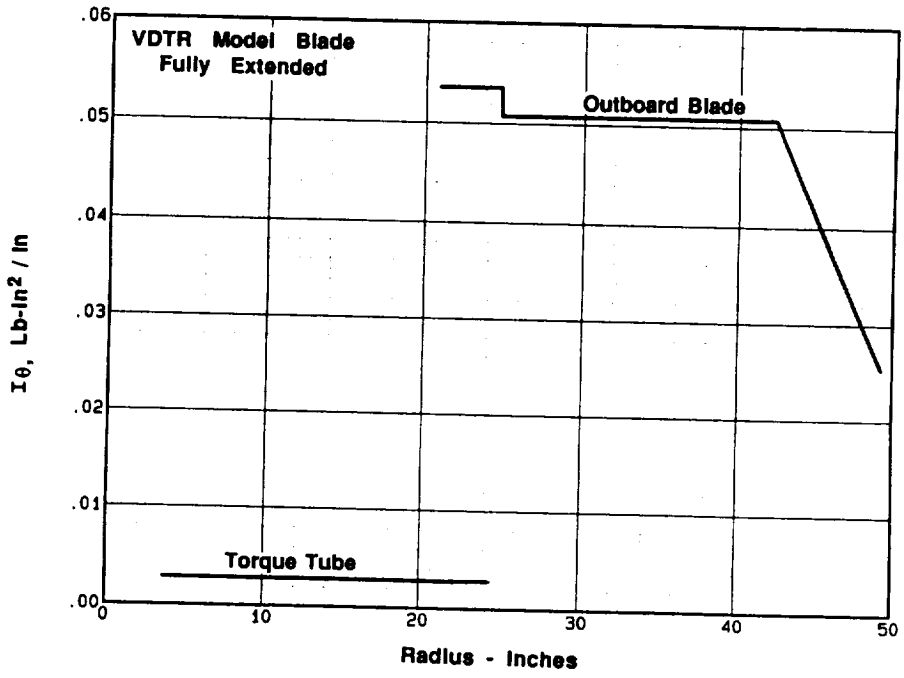

Figure 20. Model Blade Torsion Weight Inertia Distribution

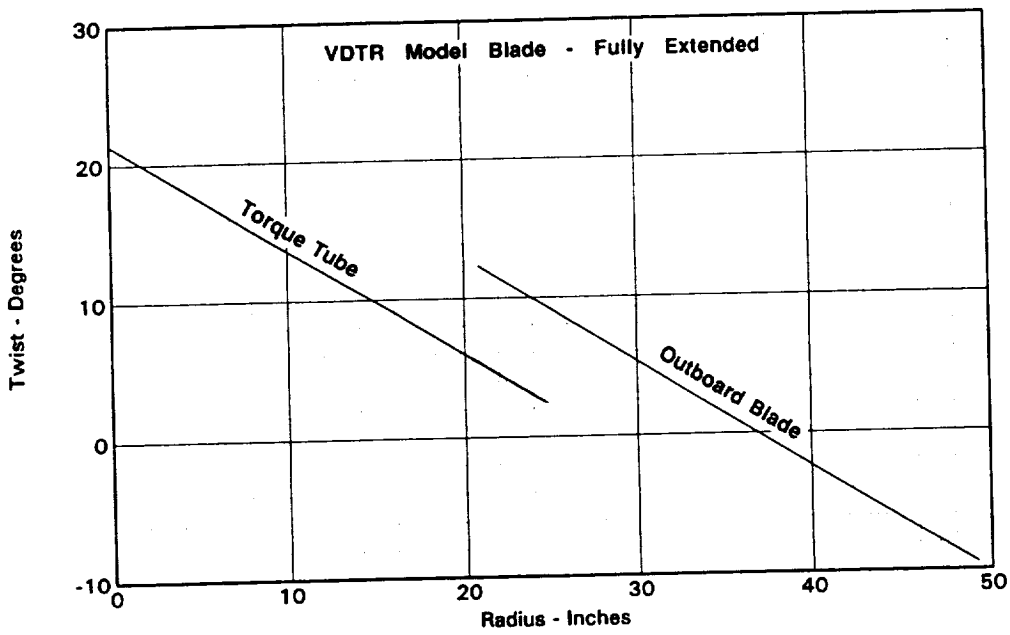

Figure 21. Model Blade Twist Distribution

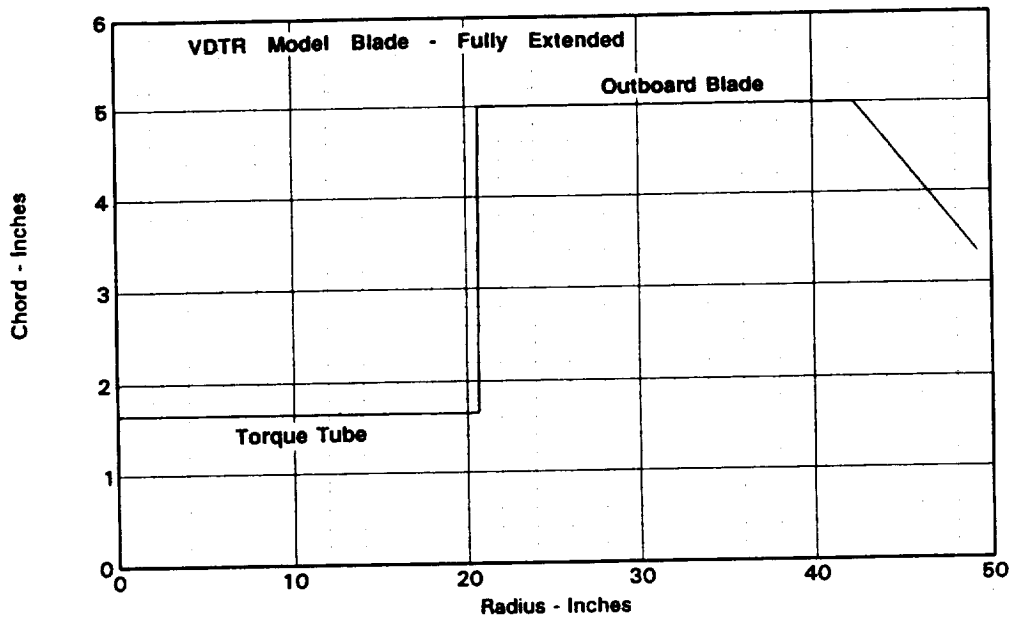

Figure 22. Model Blade Chord Distribution

Table 3. Model Rotor Hub Properties

Dist. from Center of Rot.	0" < r < 1.05"	1.05" < r < 3.12"
EIxx, lb-in^2 x10^6	24	0.729
EIyy, lb-in^2 x10^6	24	0.729
EA, lb	73.6	21
Weight, lb/in	0.5	0.5

Blade Natural Frequencies

One of the design criteria for the model blade was for it to have dynamic similarity to a representative full-scale rotor. Therefore, it was desired to place the primary blade modes at the same non-dimensional frequencies (P-orders) as the full-scale. The model blade was designed to have its first flatwise and first edgewise cantilever natural frequencies at 1.3P and 1.6P, respectively with the blade fully extended. These correspond to about 17 and 21 Hz at the normal operating speed of 792 rpm.

Beam analyses were used to calculate the blade natural frequencies. Since the blade design incorporates 31 degrees of twist, analyses that don't make small-angle assumptions were used. KTRAN, Sikorsky's generalized rotor analysis program, was used to calculate the blade frequencies for the fixed-root boundary conditions. Both rotating and non-rotating frequencies were calculated at the maximum and minimum diameters. The results of these calculations are shown in Table 4.

Table 4. Model Blade Cantilever Natural Frequencies

Mode	Non-Rotating		Rotating
	Calculated	Tap Test	Calculated
Max Diameter	(Hz)	(Hz)	(Hz)
1 Flat	7.8	6.8	15.8
1 Chord	19.6	16.5	21.7
1 Flat	44.4	41.4	56.7
1 Tors	106	100	107
Min Diameter			
1 Flat	20.3	18.2	25.5
1 Chord	58.0	36.2	60.5
2 Flat	121	114	128
1 Tors	237	210	238

Prior to testing the non-rotating blade natural frequencies were determined by tap testing. The results of those tests are also shown in Table 4 for comparison to the calculations. From this comparison it can be seen that the measured frequencies are substantially lower than the calculated ones. This is believed to be due to flexibility in the blade cuff assemblies due to normal bearing manufacturing tolerances. The resulting pitch bearing play permitted approximately 0.25 degrees of blade motion with the rotor stationary and the blade unloaded.

Rig Wing Modes

After the rig was installed in the wind tunnel and before the blades were installed a modal survey was conducted to identify the primary rig modes. The model was impacted manually in various directions while a roving accelerometer was used to measure the response with the nacelle at both hover and cruise positions. The response was found to be the same for both nacelle positions. The lowest frequency was found to be the wing flatwise bending mode at 9.1 Hz. The wing chordwise bending mode was found at 11.1 Hz and the wing torsion mode at 26.5 Hz. These results are consistent with pre-test predictions, although the bending modes are lower in frequency than expected. This is not surprising since an accurate definition of the support structure was not available. An additional, less dominant mode, was found at 12.8 Hz. The nature of this 12.8 Hz mode is unknown.

With the blades installed (max diameter) and the model operating at 792 rpm additional shake testing was accomplished using hydraulic actuators attached to the swash plate. This testing was performed with the nacelle positioned in the hover configuration (90 deg). Here the wing flatwise mode was found at 8.5 Hz and the chordwise mode at 10.3 Hz. The uncharacterized mode was seen at 12.6 Hz.

Hub and Gimbal Mechanism

The three blades of this rotor were supported by a gimballed hub that had both pitching and rolling degrees of freedom. The gimbal pivot point was 1.65 inches below (or aft of) the plane of the blades. Soft mechanical springs were employed to provide static centering of the rotor. The overall stiffness of these springs was approximately 1700 in-lbs/radian. The hub

also supported the electric motor and drive mechanism used to retract the blades. This added a substantial mass to the hub and moved its center of gravity to a point about 1.26 inches above (forward of) the blade plane. The weight of the gimballed portion of the hub was 11.2 pounds.

In addition to the freedom provided by the gimbal mechanism there was also significant torsional flexibility in the drive train. This flexibility was determined experimentally by fixing the bottom end of the drive shaft and applying a static torque to the hub. The measured rotational deflection gave an apparent torsional stiffness of 24,000 in-lbs/radian.

Rotating Blade Response

During the testing very little response was observed at the frequencies where the blade modes were expected to be. These expectations were based on natural frequency calculations for the isolated blade configuration. Of significance is the fact that blade loads did not increase as the blade edgewise frequency approached and crossed 2P near the 85% diameter configuration. In fact, diameter change was found to be very benign with no indication of blade load or vibration elevation due to frequency crossings. This can be attributed, at least in part, to significant coupling between the blades and the gimballed hub.

Figure 23 shows the results of a series of blade tap tests performed with the blades installed on the rig for a range of blade diameters. The primary blade modes are seen to increase in frequency as the blades are retracted. For comparison purposes the results of the isolated blade tap tests are also shown. It can be seen that the flatwise mode data agrees very well between the two tests but the edgewise mode data is significantly different. This shows that there is dynamic interaction between the blade and the rig, particularly in the in-plane direction since the blade edgewise mode is primarily in-plane.

Figure 24 shows an attempt to determine system natural frequencies from operating data. The spectral data was obtained from the blade root edgewise strain gages at low thrust, hover conditions. Peaks at non-integer P-orders are labelled as operating spectra. The strain gage signals were dominated by P-orders with the non-integer response levels extremely small. There is not enough data to determine the characteristics of the modes found, but it is clear that the system dynamics are quite different from those of the isolated blades.

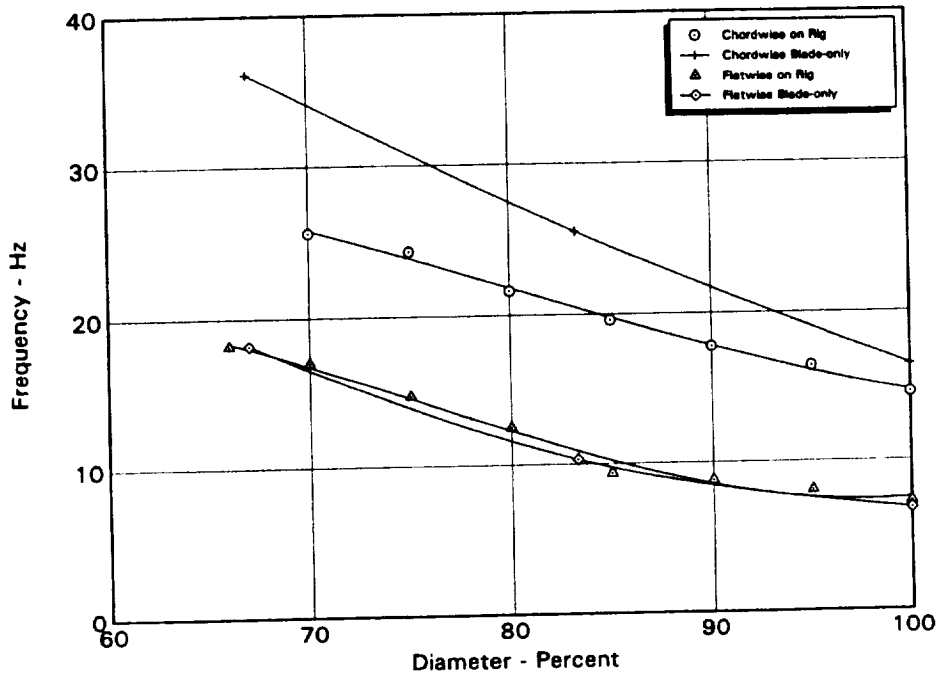

Figure 23. Measured Non-Rotating VDTR Blade Frequencies

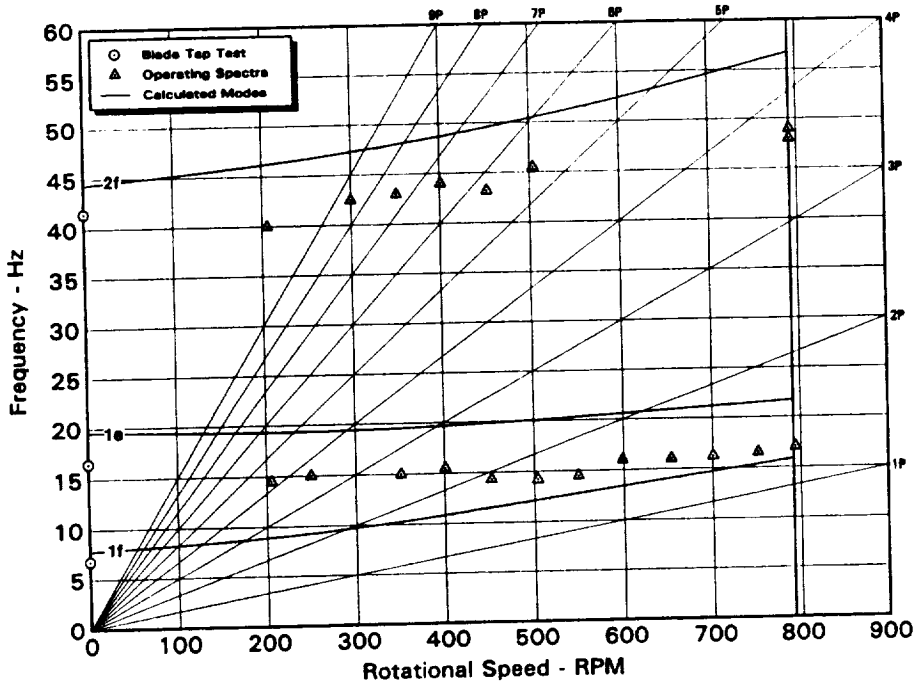

Figure 24. VDTR Model Critical Speed Diagram at 100% Diameter

Blade Loads

Measured Blade Loads

Steady and vibratory blade bending and torsional moments were measured by recording the signals from strain gages mounted at several stations along the blade. The strain gages were calibrated directly in terms of moment. Flatwise and edgewise gages were located at the 4.92, 12.30, 19.68, 26.08, and 36.90 inch stations. Torsional gages were located at the 4.92, 12.30, 19.68, and 31.98 inch stations. The signals from the strain gages were passed through slip-rings and signal conditioning amplifiers prior to being digitized and recorded by the computer. The digitizing was synchronized to the rotor rotation. Each signal was sampled 32 times per revolution, giving a maximum frequency resolution of 16P. Sixty-four revolutions (slightly under 5 seconds) of data were recorded for each steady-state test point.

Throughout the test the highest bending moments measured were at the inner-most blade station. This is true for steady and vibratory moments in both the flatwise and edgewise directions. The torsional moments were quite small at all locations and were never close to their respective limits. The maximum vibratory torsional moment measured during the entire test was 14 in-lbs.

Figures 25 through 36 show the total vibratory root moments plotted versus the non-dimensional thrust coefficient $(CT/\sigma)^*$ for all the steady-state points of the test. The data presented is the maximum vibratory amplitude experienced during the data sample, that is half the difference between the maximum and minimum values.

Figures 25 and 26 show the root moments for hover testing with the blades fully extended (100% diameter). The first series of points was run with the nacelle tilted four degrees above the cruise position in an effort to minimize the wing lift caused by the rotor slipstream. The test was then repeated with the nacelle in the normal hover position (90-deg Tilt). A clear trend of increasing root moments with increasing thrust is evident. It also appears that the orientation of the rotor with respect to the wing is unimportant to the rotor loads. Analysis of this data shows it to be almost purely 1P in frequency. Phasing of the 1P component is such that the blade is horizontal (perpendicular to gravitational acceleration) when the moments are at their extremes. The flatwise and edgewise moments combine to give a resultant moment which is very close to the in-plane direction. This holds true over the entire range of thrust.

The dominance of 1P in the blade response, particularly in hover, suggests that gravity loading could be the source of the excitation. The model was oriented with the rotor shaft horizontal such that gravity causes a once-per-revolution in-plane load on each blade. The magnitude of this load is approximately 35 in-lbs at the 4.92-in station. Apparently one or more system modes is close enough to the 1P frequency of 13.2 Hz to cause substantial magnification. The highest in-plane 1P moment measured in hover was about 450 in-lbs.

If gravity is the source of excitation in hover, it remains to explain why the response increases so strongly with increasing rotor thrust. There is some evidence that a blade mode exists somewhat above 1P, and that its frequency decreases with increasing thrust, making it closer to 1P. It was seen at about 15.9 Hz at low thrust and at 15 Hz at high thrust. This relatively small frequency shift isn't enough to explain the large 1P magnification, but it may be involved.

Figures 27 and 28 show comparable data for hover testing at 83 percent diameter and Figures 29 and 30 are for 67 percent (minimum) diameter. A dramatic reduction in vibratory root moments is seen for these reduced diameter configurations. The 1P frequency component becomes less dominant as the diameter is reduced. At 83 percent diameter 1P is only about half of the total vibratory amplitude, and at 67 percent diameter the 1P is only about a quarter of the total. The remainder of the vibratory moments are made up of 2P through 5P in various amounts, no single frequency component being dominant.

Figures 31 and 32 show the test data for conversion testing at maximum diameter. Each curve represents a particular combination of nacelle tilt angle and equivalent full-scale velocity.

The trend of the data during conversion is similar to hover, that is an increase in root vibratory moment with increasing thrust. Here the increase was even sharper and higher loads were observed. Some test points for the maximum diameter configuration were suspended when blade moments exceeded limits that imposed safety factors of two on the structure's steady and vibratory allowables. The characteristics of the data are also similar to those seen in hover. The large root moments were again dominated by 1P and the resultant moment was essentially in-plane.

Figures 33 and 34 show the conversion data for 85 percent diameter. As in hover, the moments are greatly reduced from those at maximum diameter. Here the testing was not restricted by loads, but rather by the model control limitations illustrated in Figure 11.

Figures 35 and 36 are plots of the conversion and cruise testing with the blades fully retracted. Here, as in hover at this diameter, the loads are quite small with only moderate increases seen with thrust. For most of these test points 2P is the largest frequency component, with 1P and 3P also prominent.

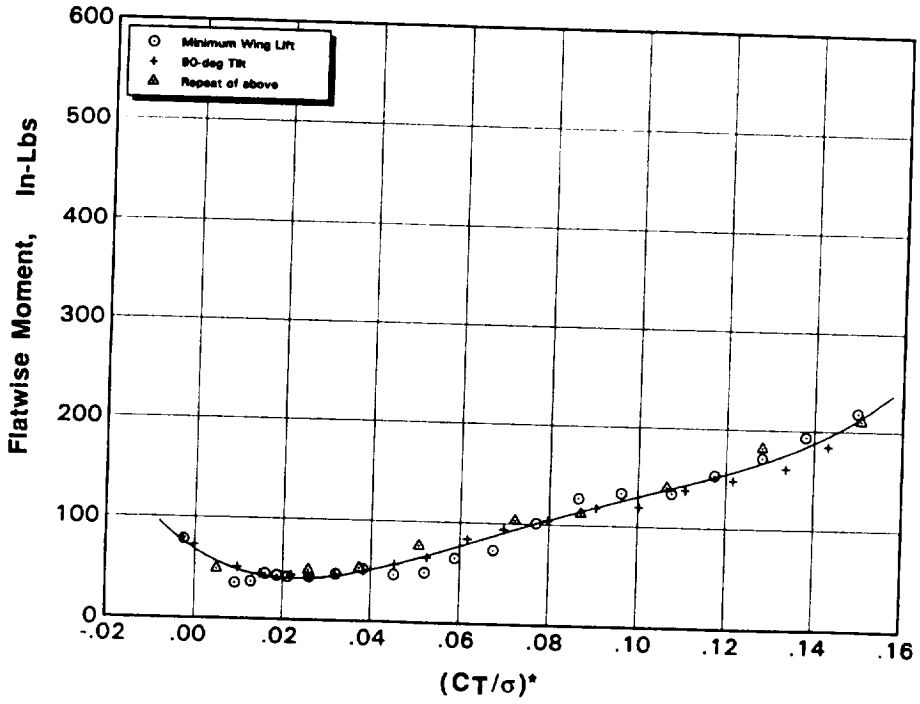

Figure 25. Vibratory Flatwise Root Moments Versus (CT/σ)* for 100% Diameter

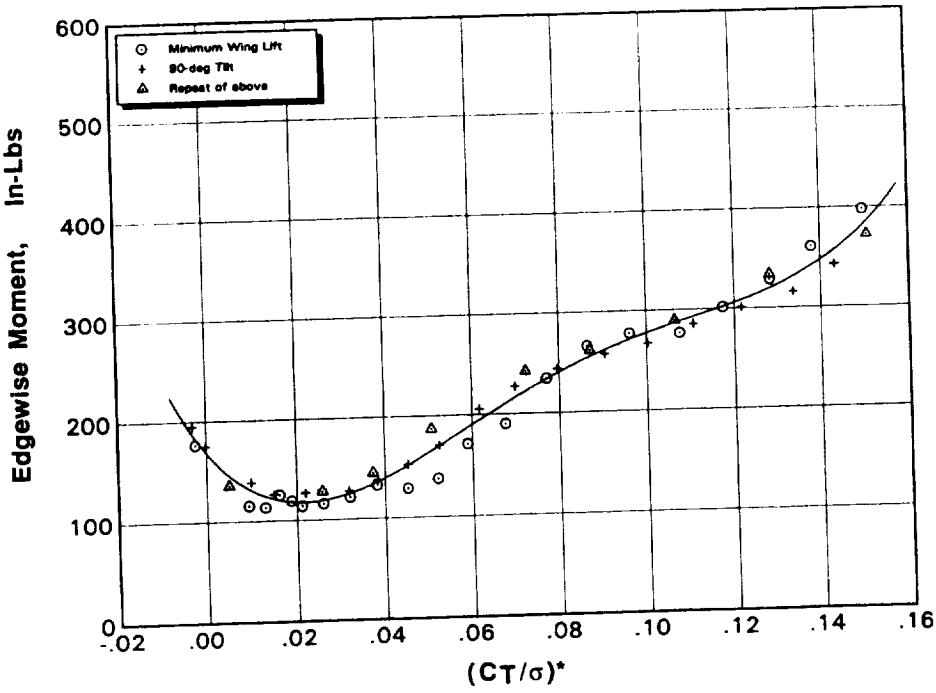

Figure 26. Vibratory Edgewise Root Moments Versus (CT/σ)* for 100% Diameter

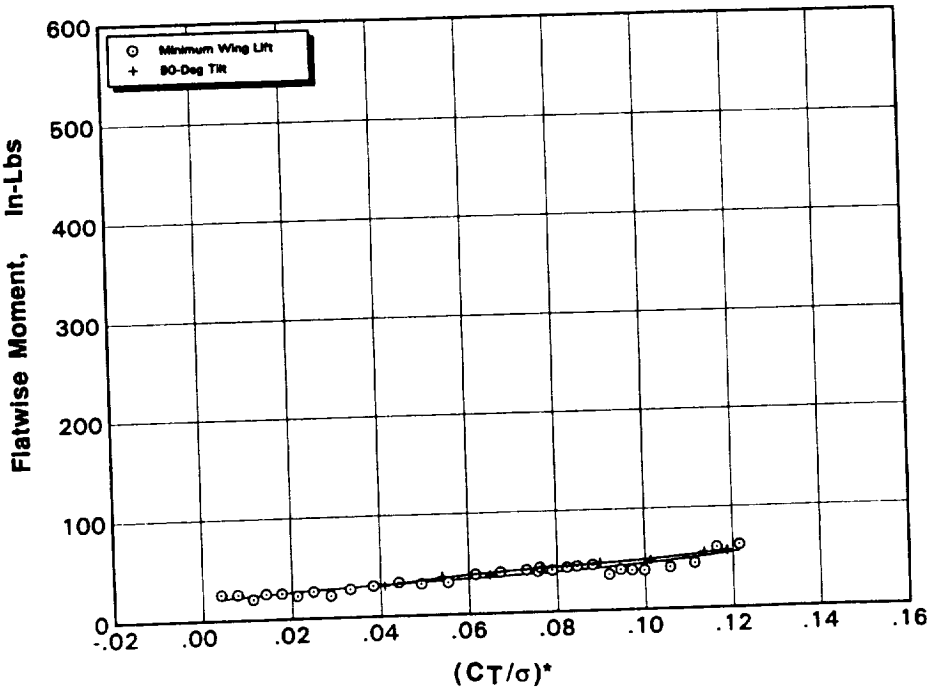

Figure 27. Vibratory Flatwise Root Moments Versus (CT/σ)* for 83% Diameter

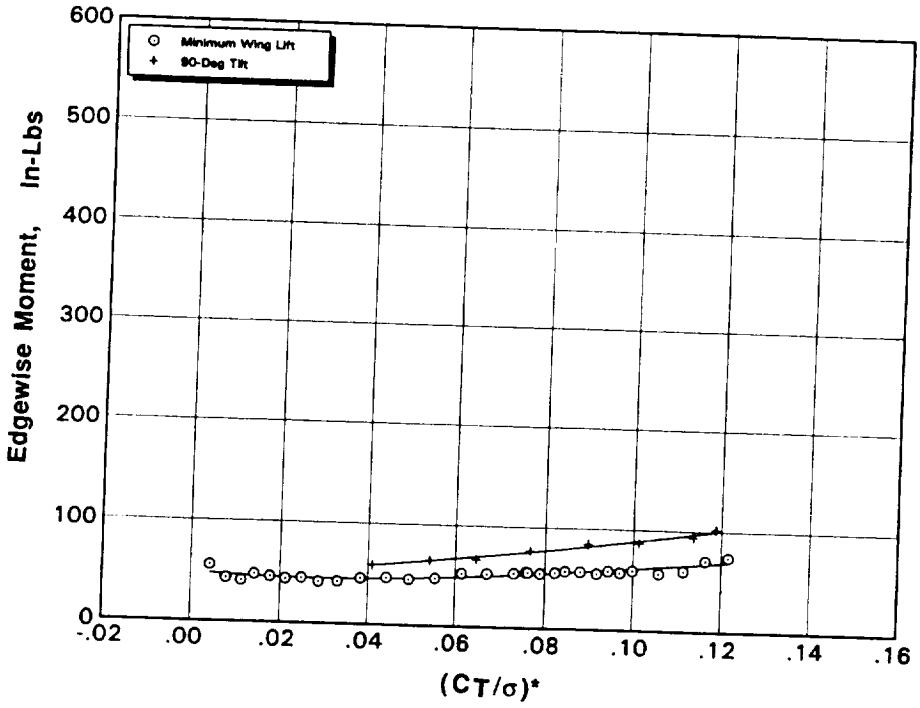

Figure 28. Vibratory Edgewise Root Moments Versus (CT/σ)* for 83% Diameter

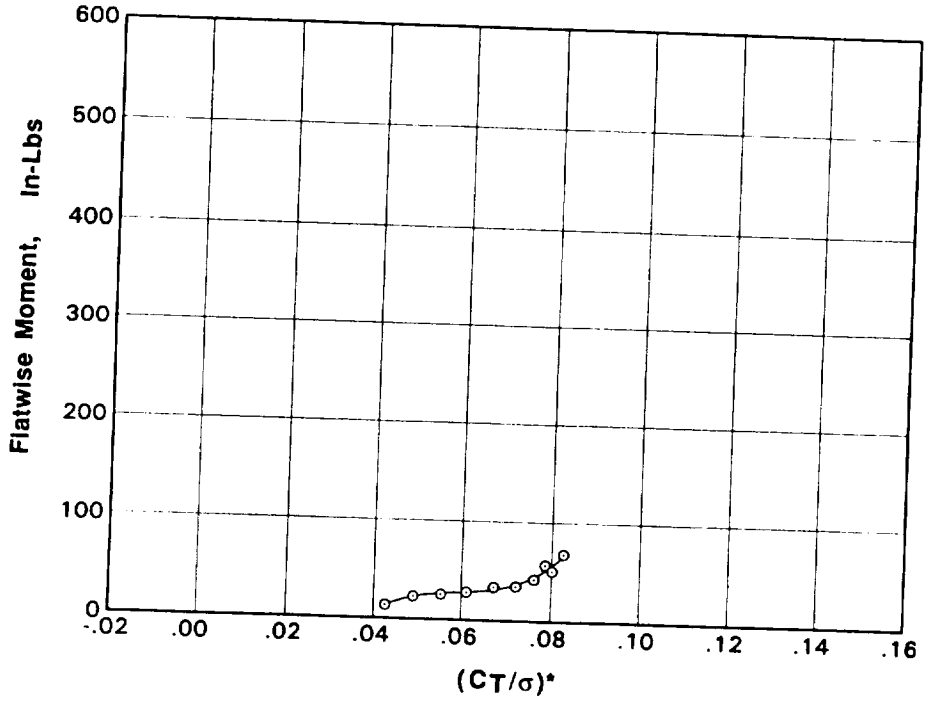

Figure 29. Vibratory Flatwise Root Moments Versus (CT/σ)* for 67% Diameter

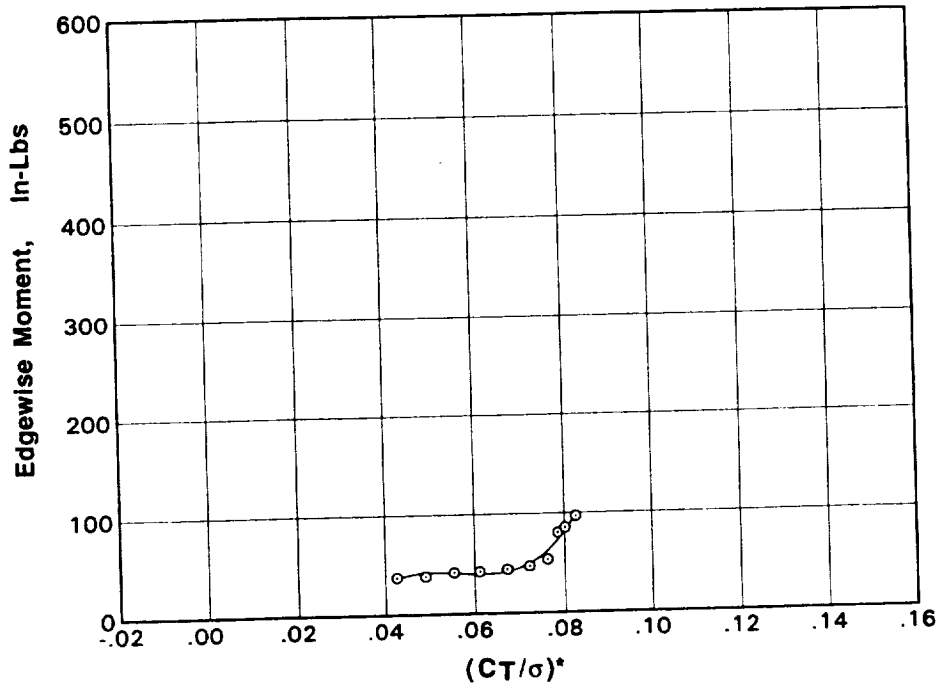

Figure 30. Vibratory Edgewise Root Moments Versus (CT/σ)* for 67% Diameter

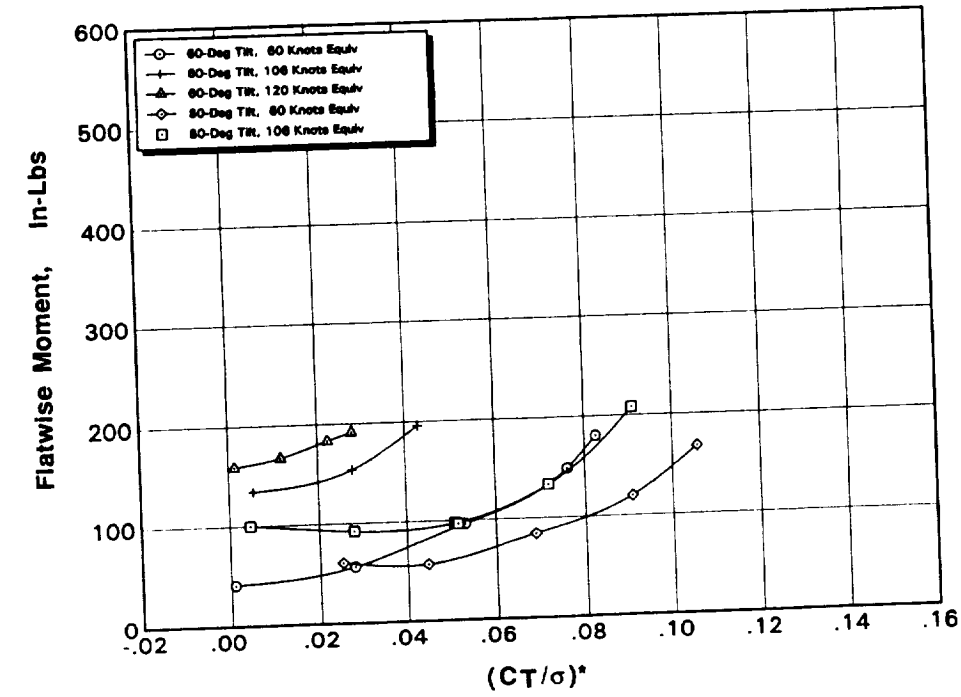

Figure 31. Vibratory Flatwise Root Moments Versus (CT/σ)* for 100% Diameter Points in Conversion

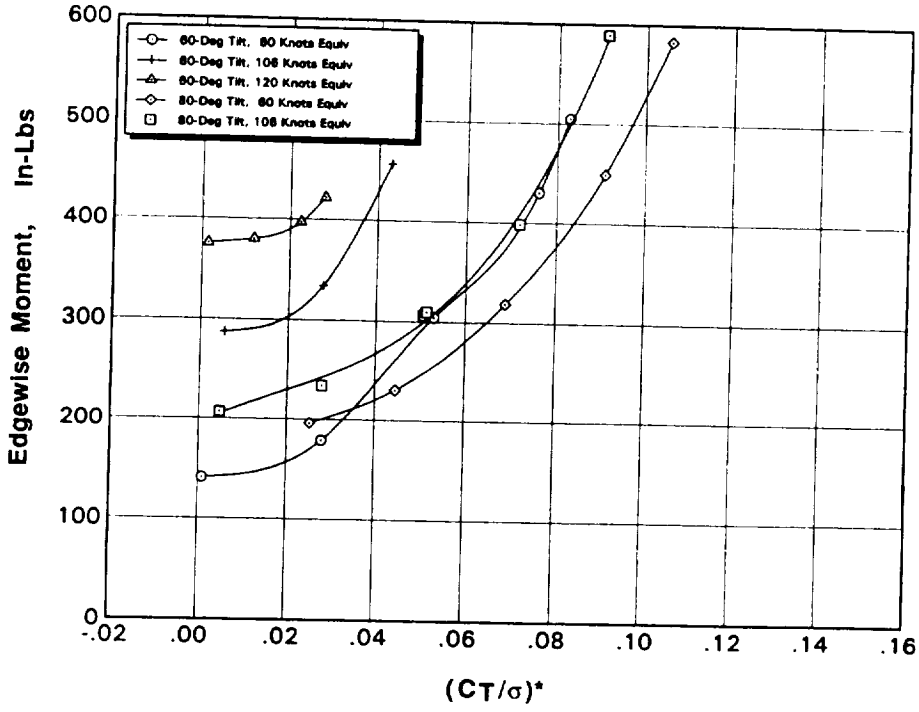

Figure 32. Vibratory Edgewise Root Moments Versus (CT/σ)* for 100% Diameter Points in Conversion

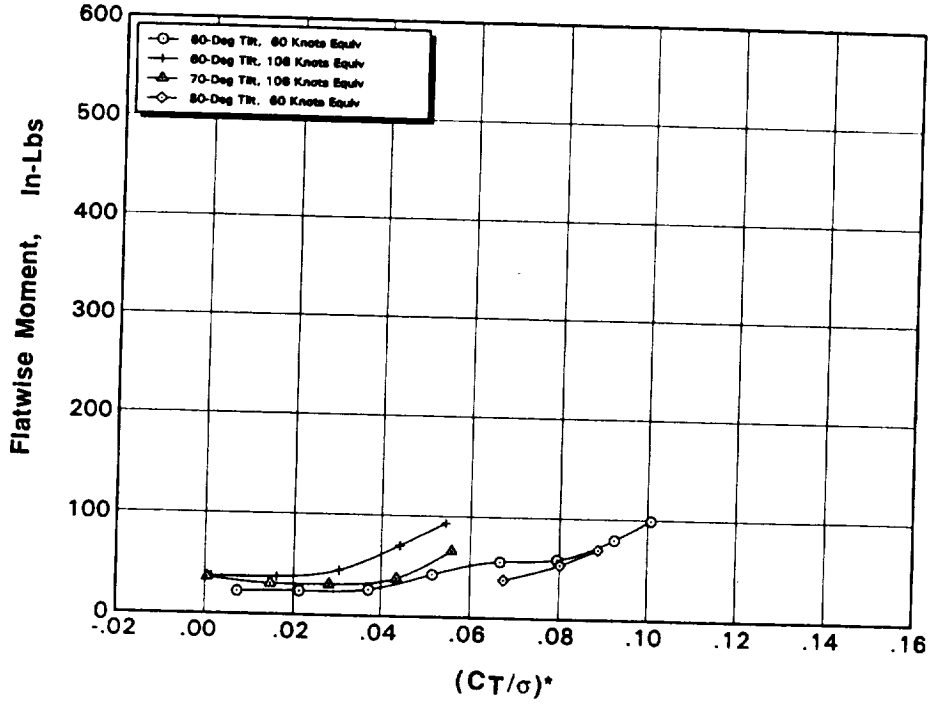

Figure 33. Vibratory Flatwise Root Moments Versus (CT/σ)* for 85% Diameter Points in Conversion

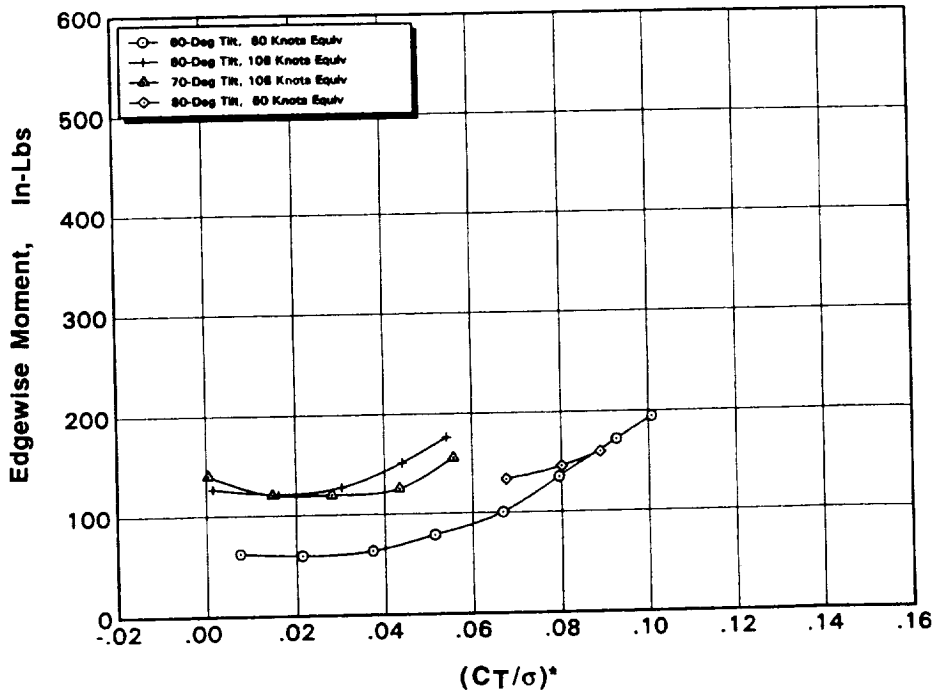

Figure 34. Vibratory Edgewise Root Moments Versus (CT/σ)* for 85% Diameter Points in Conversion

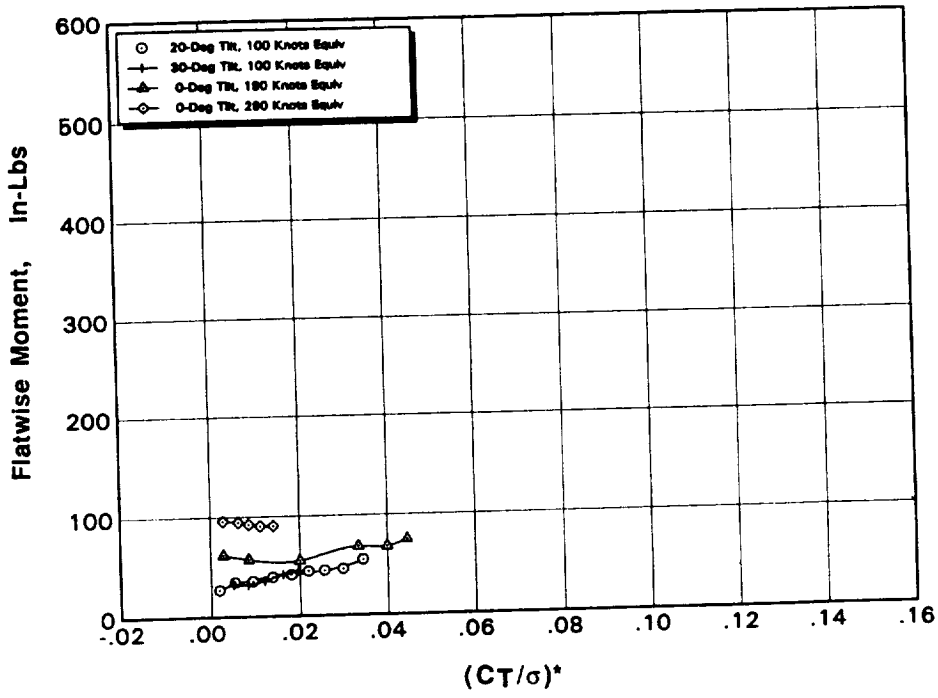

Figure 35. Vibratory Flatwise Root Moments Versus (CT/σ)* for 67% Diameter Points in Conversion

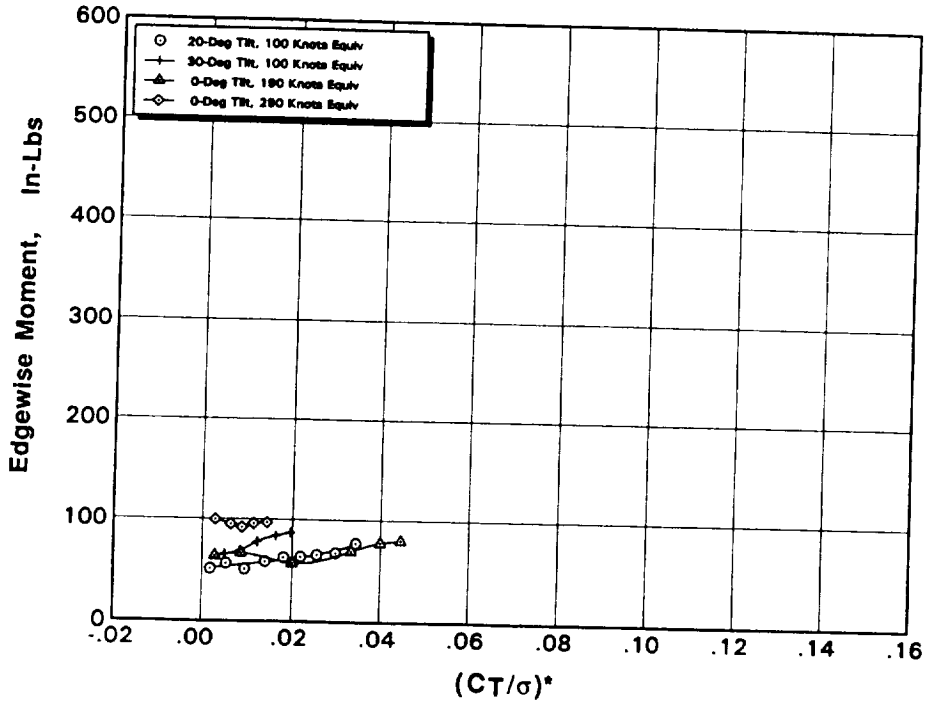

Figure 36. Vibratory Edgewise Root Moments Versus (CT/σ)* for 67% Diameter Points in Conversion

Calculated Blade Loads

One of the objectives of this contract was to correlate the measured blade loads with their corresponding calculated values. Blade loads were predicted for representative test points using Sikorsky's RDYNE analysis. RDYNE is a time history aeroelastic analysis based on dynamic substructures and aerodynamic components. The substructures are assembled into a coupled system represented by a second order differential equation matrix.

Tables 5 and 6 compare RDYNE predictions with test data. Predicted loads are substantially lower and less dominated by 1P than the loads measured during the test. This can be attributed to an incomplete understanding of the coupled system dynamics for the analysis. This lack of an accurate characterization of the rig's dynamic parameters compromised the predicted results.

Table 5. Experimental/Analytical Comparison
Maximum Diameter Hover, Condition 15.17

Parameter	Units	Test	Calculated
Tunnel Vel.	Knots	0	0
Equiv. F.S. Vel.	Knots	0	0
Nacelle Tilt	Degrees	90	90
Thrust	Lbs	180.3	180.4
Torque	Ft-Lbs	88.8	62.5
Collective	Deg	17.57	13.57
A1s	Deg	0.25	0.05
B1s	Deg	1.43	0.09
Root Flat Mom:			
Mean	In-Lbs	281.8	399.4
Vibratory	In-Lbs	218.4	11.7
1P	In-Lbs	217.5	11.5
2P	In-Lbs	3.6	0.3
Root Chord Mom:			
Mean	In-Lbs	-103.4	-61.5
Vibratory	In-Lbs	397.8	55.6
1P	In-Lbs	387.9	55.5
2P	In-Lbs	21.9	0.4

Blade loads encountered during the course of this test are all well within the allowable loads for the VDTR blade. Aeroelastic scaling of model blade stiffnesses and loads results in the same conclusion for the full-scale design. Figure 37 illustrates the range of blade flatwise and edgewise root steady moments encountered during the test. The outer boundary line on this plot illustrates the ultimate strength of the blade root-end based on component testing. The inner line illustrates a moment level that is 50% of the ultimate. This lower level was chosen as a conservative limit for this test.

Figure 38 illustrates the range of blade flatwise and edgewise vibratory root moments encountered. Here the outer boundary indicates the root-end section moment levels for infinite blade life based on the results of a fatigue test. The inner line indicates moment levels of half that allowed for infinite life. Again the inner boundary was used as a conservative limit for this test. As shown in the figure, this boundary limited some of the helicopter mode test conditions with the rotor fully extended.

Table 6. Experimental/Analytical Comparison Maximum Diameter Conversion, Condition 12.23

Parameter	Units	Test	Calculated
Tunnel Vel.	Knots	53	53
Equiv. F.S. Vel.	Knots	106	106
Nacelle Tilt	Degrees	80	80
Thrust	Lbs	109.7	108.9
Torque	Ft-Lbs	46.1	37.9
Collective	Deg	13.13	10.36
A1s	Deg	-3.06	0.18
B1s	Deg	7.63	5.51
Root Flat Mom:			
Mean	In-Lbs	84	166
Vibratory	In-Lbs	208	200
1P	In-Lbs	204	90
2P	In-Lbs	12	142
Root Chord Mom:			
Mean	In-Lbs	-148	-12
Vibratory	In-Lbs	589	435
1P	In-Lbs	559	243
2P	In-Lbs	66	254

Distributed blade vibratory moments for the maximum diameter rotor in a helicopter flight mode are illustrated for a range of $(CT/\sigma)^*$ values in Figures 39a & b. Maximum blade loads were encountered early in conversion with the rotor fully extended. Blade moments were found to reduce significantly as rotor diameter was decreased in the process of tiltrotor conversion.

Distributed blade vibratory moments for the 85% diameter rotor with the nacelle tilted to 60 degrees for a range of $(CT/\sigma)^*$ values are illustrated for flight velocities of 60 and 107 knots in Figures 40a & b and Figures 41a & b, respectively. Of significance is the fact that blade loads did not increase near the 85% diameter configuration where the blade edgewise frequency was expected to approach and cross 2P. In fact, diameter change was found to be very benign with no indication of blade load or vibration elevation due to frequency crossings.

Distributed blade vibratory moments for the rotor at minimum diameter in the cruise configuration for a range of $(CT/\sigma)^*$ values are illustrated for flight velocities of 190 and 290 knots in Figures 42a & b and Figures 43a & b, respectively. All blade moments were at a very low level in this configuration.

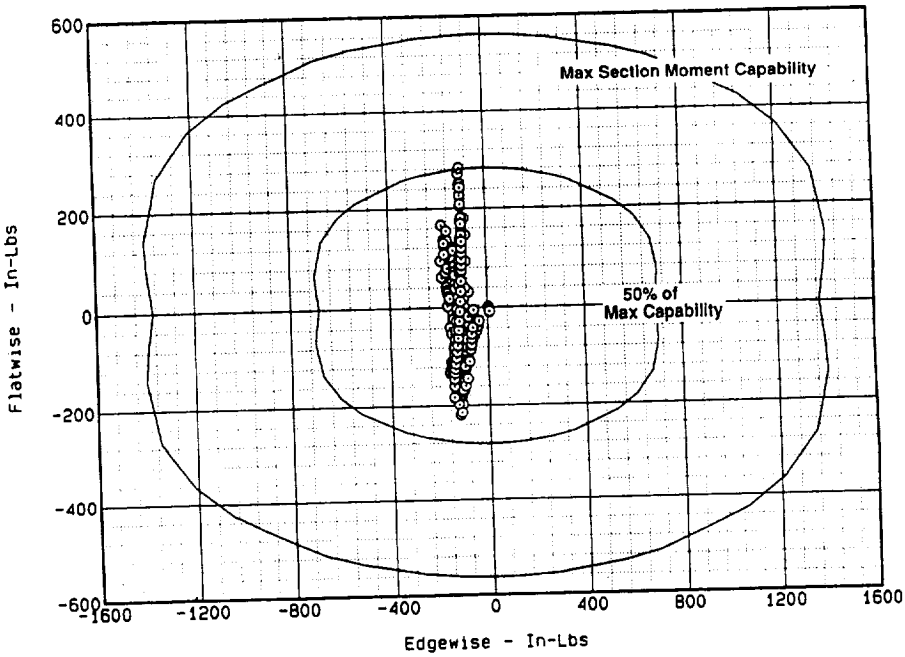

Figure 37. Blade Root End Steady Moments

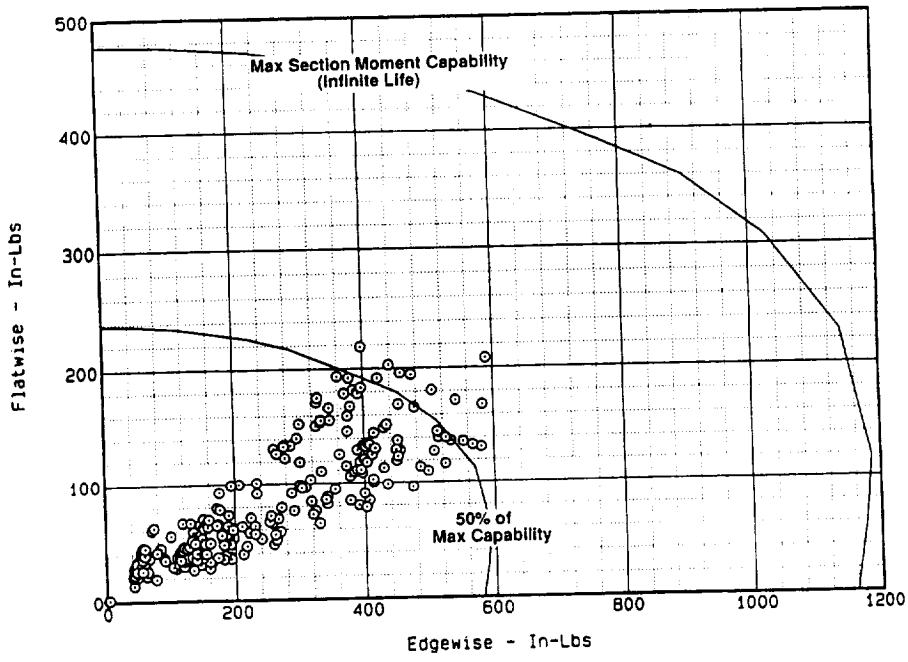

Figure 38. Blade Root End Vibratory Moments

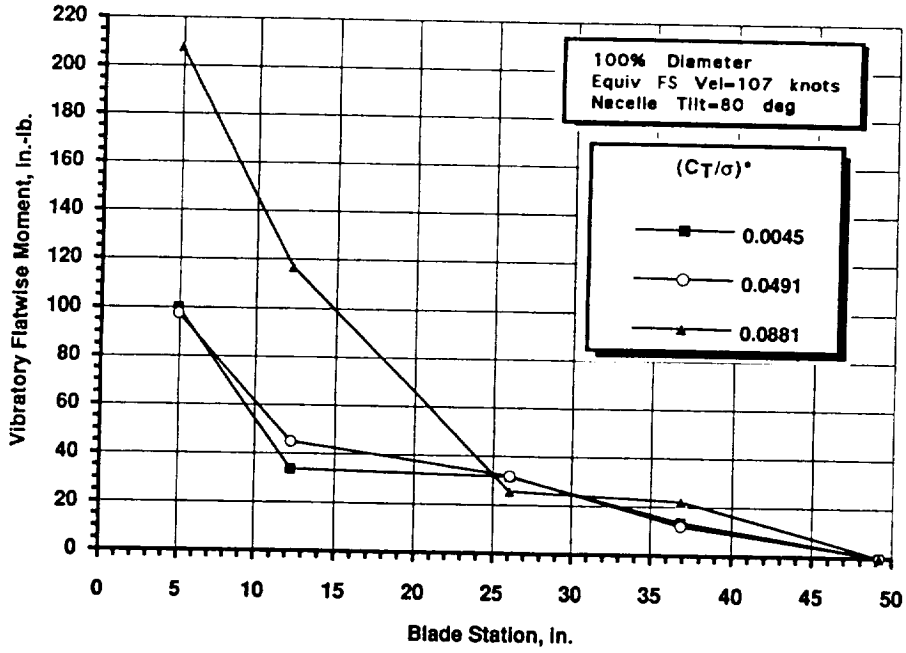

Figure 39a. Distributed Vibratory Flatwise Moments, 100% Diameter

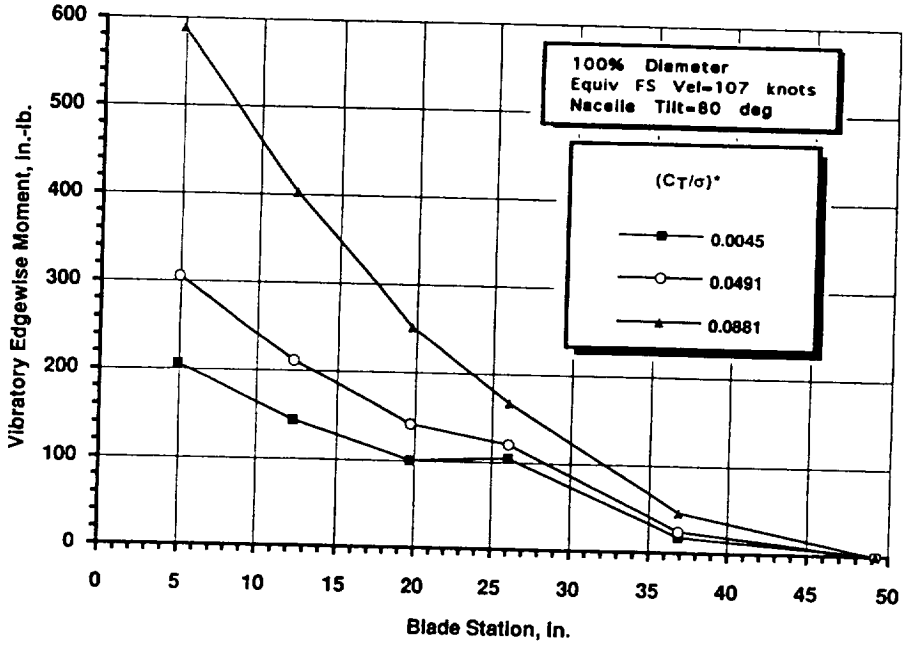

Figure 39b. Distributed Vibratory Edgewise Moments, 100% Diameter

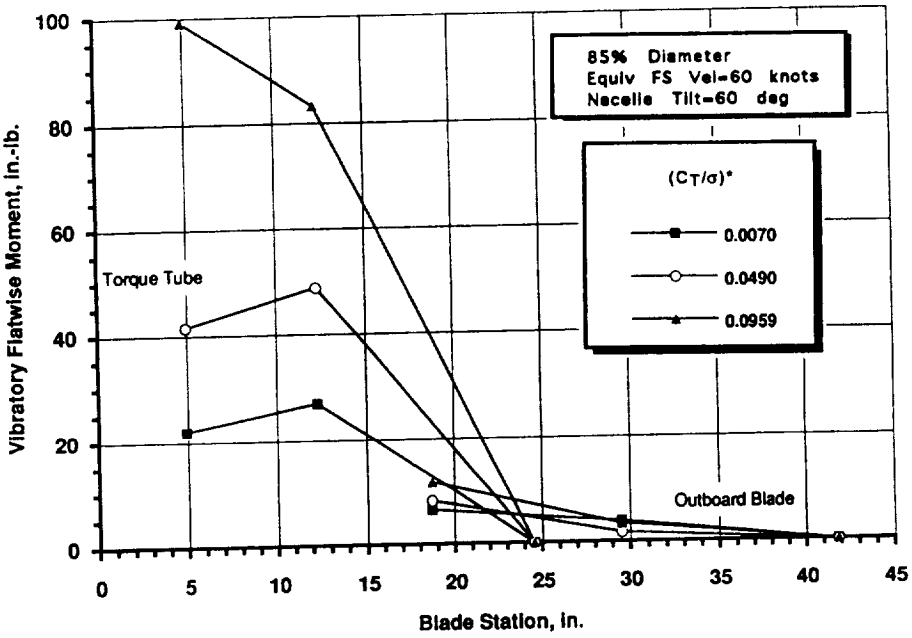

Figure 40a. Distributed Vibratory Flatwise Moments, 85% Diameter, 60 Knots

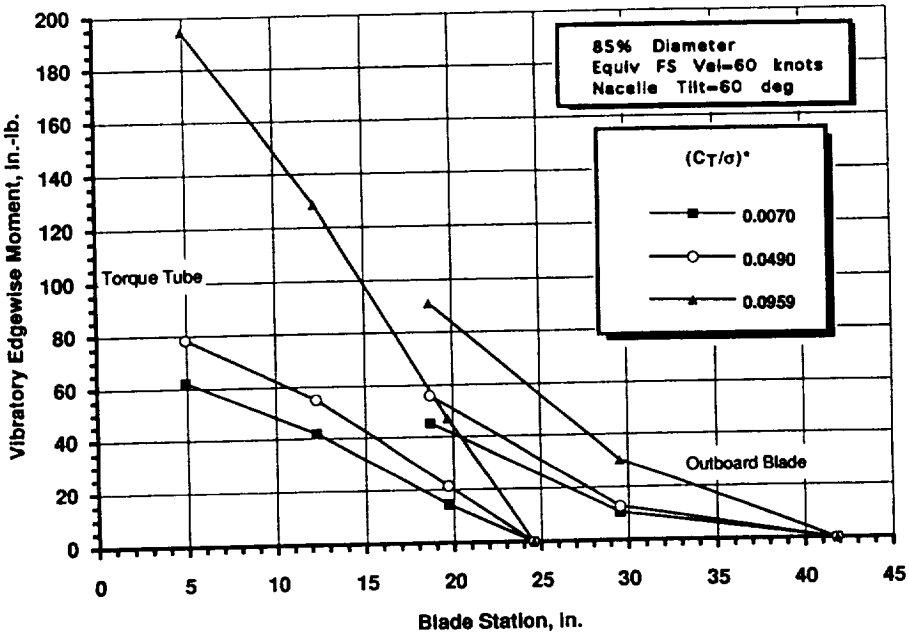

Figure 40b. Distributed Vibratory Edgewise Moments, 85% Diameter, 60 Knots

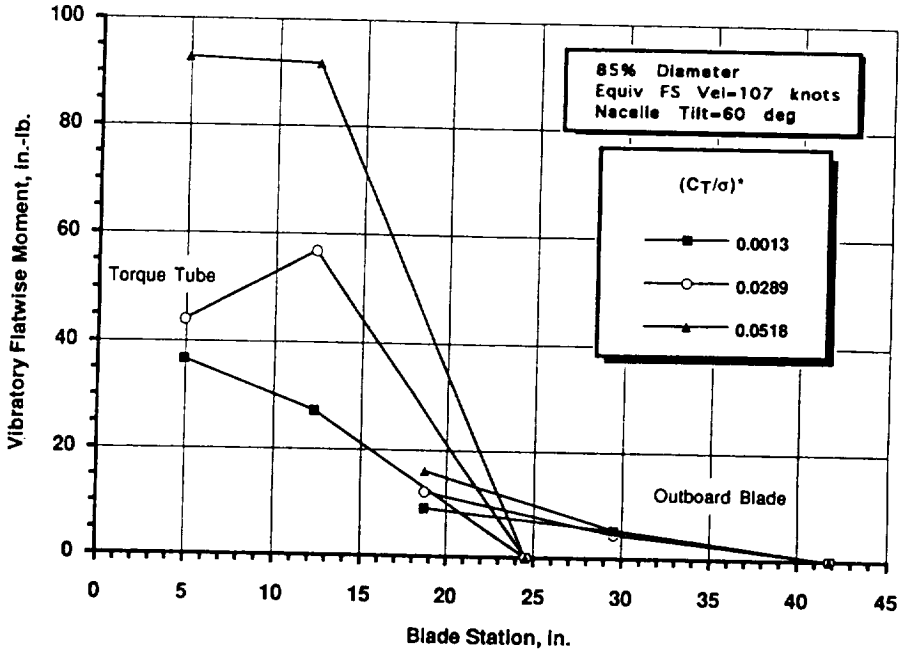

Figure 41a. Distributed Vibratory Flatwise Moments, 85% Diameter, 107 Knots

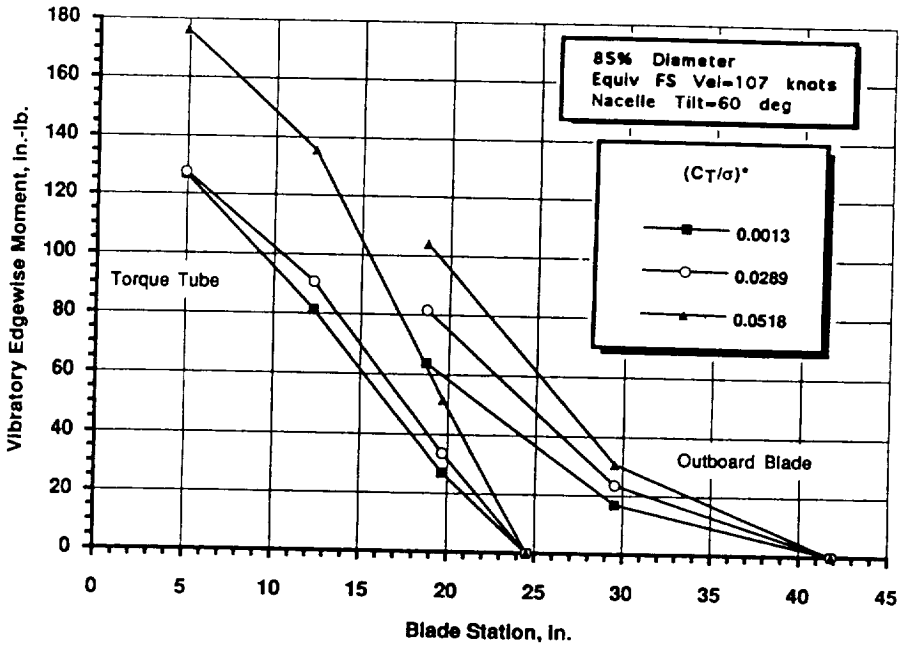

Figure 41b. Distributed Vibratory Edgewise Moments, 85% Diameter, 107 Knots

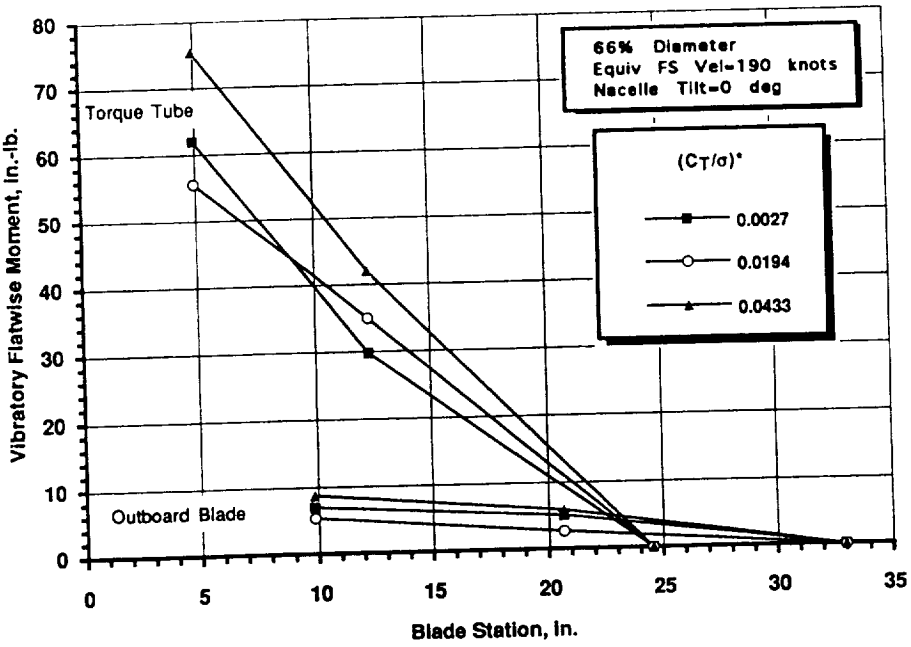

Figure 42a. Distributed Vibratory Flatwise Moments, 66% Diameter, 190 Knots

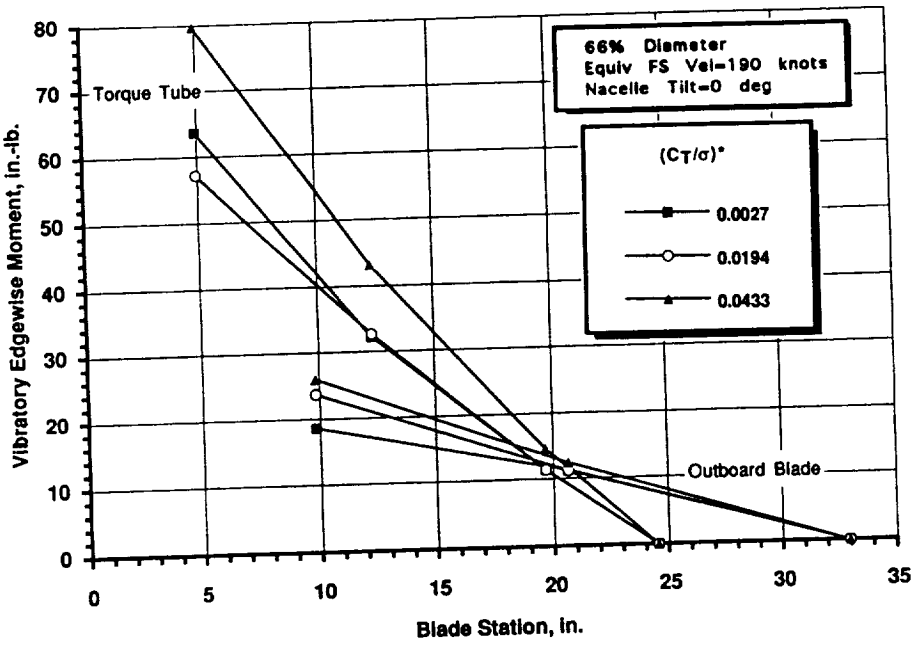

Figure 42b. Distributed Vibratory Edgewise Moments, 66% Diameter, 190 Knots

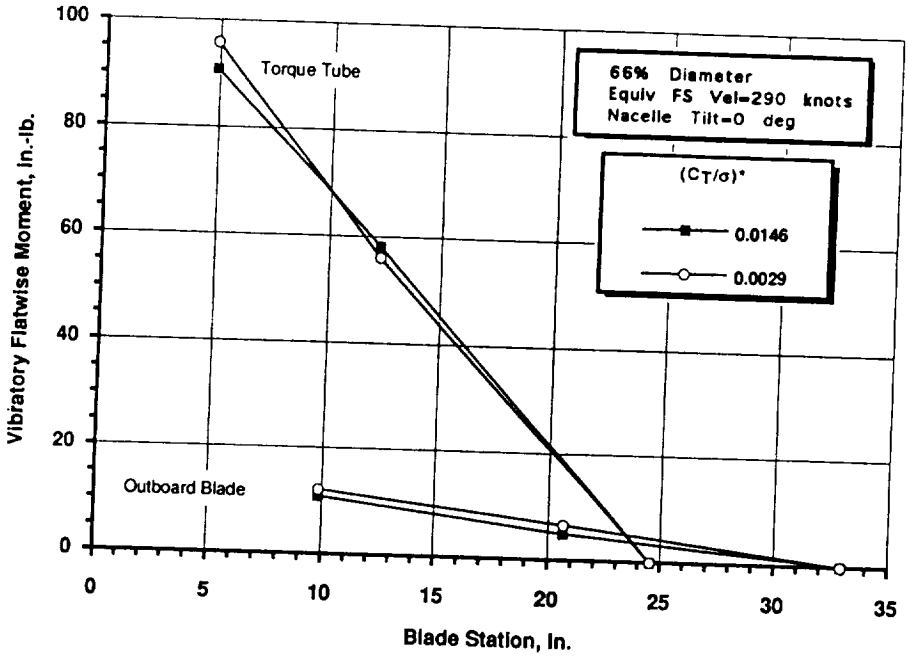

Figure 43a. Distributed Vibratory Flatwise Moments, 66% Diameter, 290 Knots

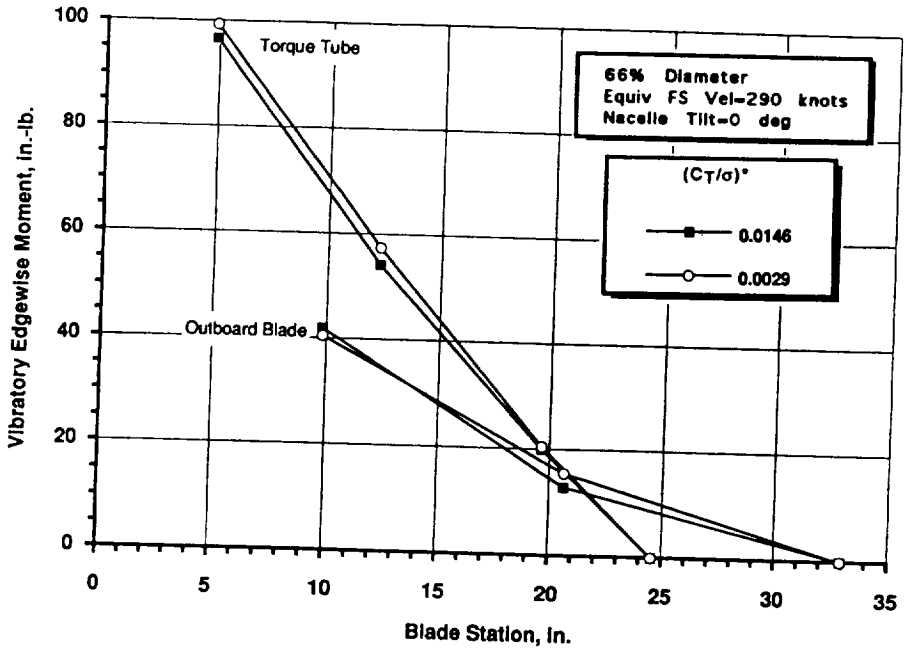

Figure 43b. Distributed Vibratory Edgewise Moments, 66% Diameter, 290 Knots

Hover Performance

Hover performance was evaluated in the configuration shown in Figure 44. Inherent during this portion of the test was an induced tunnel velocity due to tunnel recirculation. This was not truly representative of hover, but more representative of a vertical climb. To account for this in the figure of merit (F.M.) calculations, climb power increments were subtracted from the measured power. This increment was based on half the rate of change of potential energy of the aircraft for the measured rate of climb (Ref.4). Figure 45 illustrates the corrected F.M. values representative of a true hover condition. The solid line in this figure represents hover F.M. predicted by the EHPIC analysis (Refs. 5, 6). Test results corrected for climb power reveal better hover performance than predicted (on the order of 2 to 3 points) at low thrust levels with correlation improving at hover thrust levels.

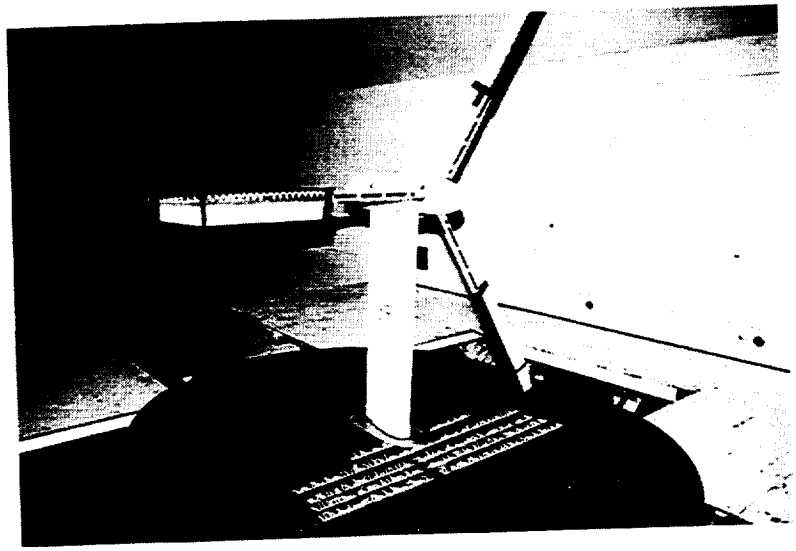

Figure 44. VDTR Model Installation for Hover Testing

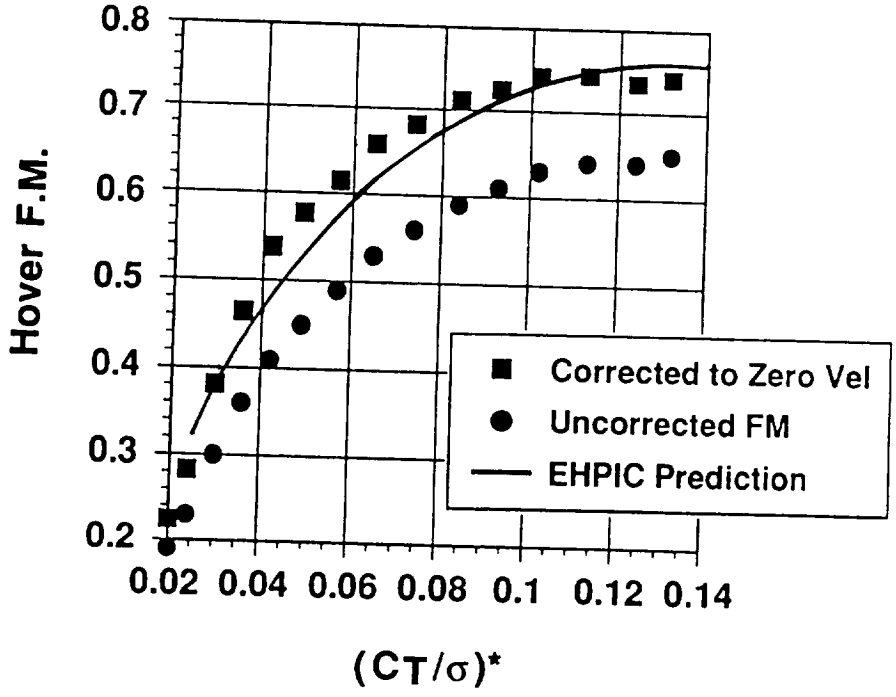

Figure 45. VDTR Hover Performance

Cruise Performance

As illustrated in the test envelope shown in Figure 10, extensive data were acquired in the cruise configuration for equivalent full-scale velocities ranging from 150 to 325 knots. Figure 46 illustrates rotor cruise efficiency (ratio of propulsive power to shaft power) as a function of $(C_T/\sigma)^*$. Although the viability of performance data is questionable for reduced tip speed testing due to Reynolds Number inconsistencies, cruise efficiencies as calculated were showing good performance.

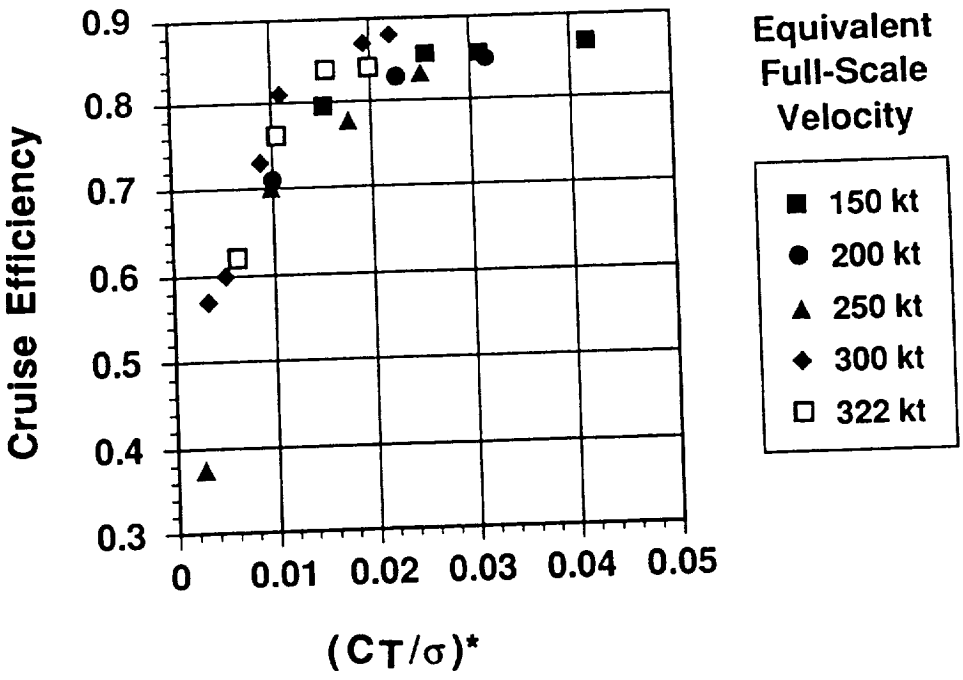

Figure 46. VDTR Cruise Performance

Gust Response

An important VDTR attribute revealed during earlier studies (Ref. 7) and confirmed by this test is an impressive reduction in horizontal gust response relative to conventional tiltrotors. Gust response is a major concern in turbulent weather because the fixed diameter rotors of existing tiltrotor aircraft are oversized in cruise and thus prone to high levels of uncomfortable gust response.

Figure 47 reveals the horizontal gust loading measured during the test scaled to a quasi-steady 30 fps gust. The gust response was evaluated by first measuring thrust for a trimmed rotor condition and then increasing and/or decreasing tunnel velocity and measuring thrust for the untrimmed condition. The test data are compared to EHPIC predicted results for both a conventional and a variable diameter tiltrotor. Correlation is good between test data and predictions for the VDTR. The significantly higher gust response for the conventional tiltrotor is attributed to increased blade area, higher tip speed, lower blade pitch angles, and lower mean lift coefficients relative to the VDTR.

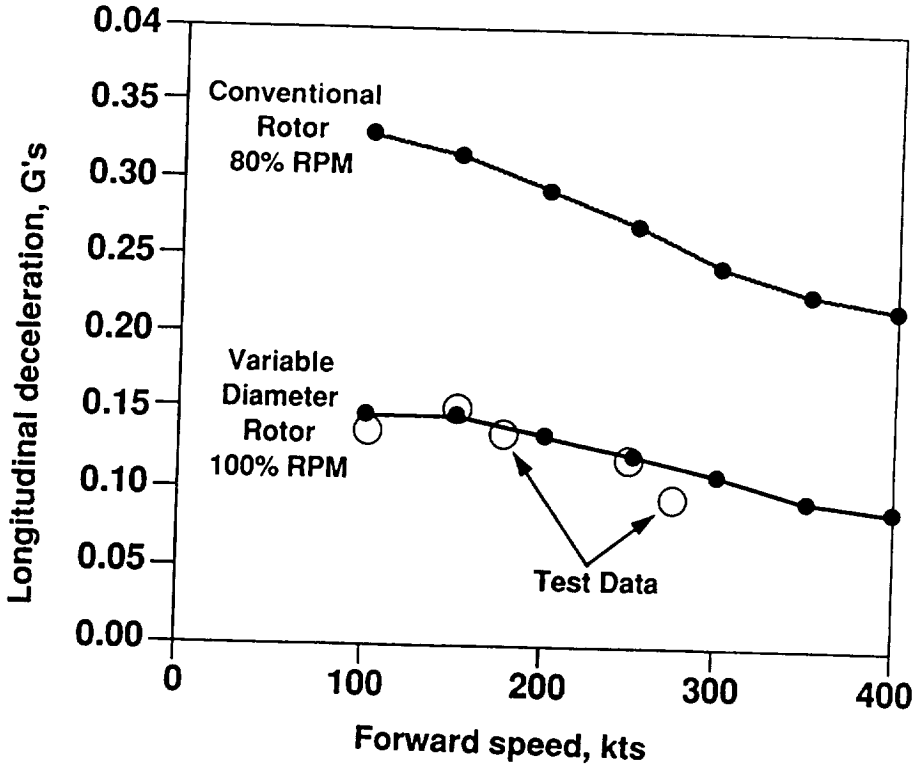

Figure 47. VDTR Simulated Horizontal Gust Response

Control Power

Figure 48 illustrates collective control power measured for rotor diameters of 100 and 85% and nacelle tilt angles of 60 and 80 degrees for equivalent flight velocities of 60 and 106 knots. Four to five test points are illustrated to establish collective control power. The data appears excellent with near linear variations in thrust with collective for all conditions evaluated. Control power derivatives appear nearly constant for the range of data acquired.

Pitch control power evaluations were performed for rotor diameters ranging from 100% to 66% and nacelle tilt angles of 0 to 80 degrees for equivalent flight velocities of 60 to 290 knots. Command blade B1s variations primarily affect gimbal pitching motion (a1s), hub pitching force (Fx) and hub pitching moment (My). Figures 49a, b &c illustrate gimbal a1s, hub Fx, and hub My, respectively, plotted against blade B1s. Three to five data points were taken to construct each of the lines in these figures. Only the end points are shown where a straight line approximation closely fits the data.

Gimbal a1s variation with blade B1s is fairly consistent regardless of diameter and nacelle tilt as shown in Figure 49a. There is a small decrease in the slope, $\Delta a1s/\Delta B1s$, as velocity increases. Figure 49b shows that hub Fx variation with blade B1s tends to increase as nacelle angle increases and velocity decreases for rotor diameters of 100% and 85%. At minimum diameter in the cruise configuration, $\Delta Fx/\Delta B1s$ is very similar to that for the rotor in helicopter mode at an equivalent velocity of 60 knots. As illustrated in Figure 49c, hub My variation with blade B1s is very small, as you would expect with the very soft gimbal. In fact, the very small magnitude variations in hub My are within the accuracy range of the model balance. By far, the major pitching moment contribution to the aircraft would be from the Fx force causing a pitching moment about the aircraft center of gravity.

Roll control power evaluations were performed for similar variations in rotor diameter (100% to 66%) and nacelle tilt (0 to 80 degrees) and equivalent flight velocities (60 to 290 knots). Command blade A1s variations primarily affect gimbal rolling motion (b1s), hub lateral force (Fy) and hub lateral moment (Mx). Figures 50a, b& c illustrate gimbal b1s, hub Fy, and hub Mx, respectively, plotted against blade A1s. Again, three to five data points were taken to construct each of the lines in these figures. Only the end points are shown where a straight line approximation closely fits the data.

Gimbal b1s variation with blade A1s is fairly consistent regardless of nacelle tilt for diameters in the range from 100% to 80%, although there is a tendency for $\Delta b1s/\Delta A1s$ to increase at minimum diameter with increasing velocity as shown in Figure 50a. Figure 50b shows that hub Fy variation with blade A1s is also fairly consistent for the higher rotor diameters. $\Delta Fy/\Delta A1s$ takes on a more negative magnitude as velocity increases at minimum diameter. Hub moment variations with blade A1s is again small, as you would expect with the very soft gimbal (Figure 50c). By far, the major lateral moment contribution to the aircraft would be from the Fy force causing a lateral moment about the aircraft center of gravity.

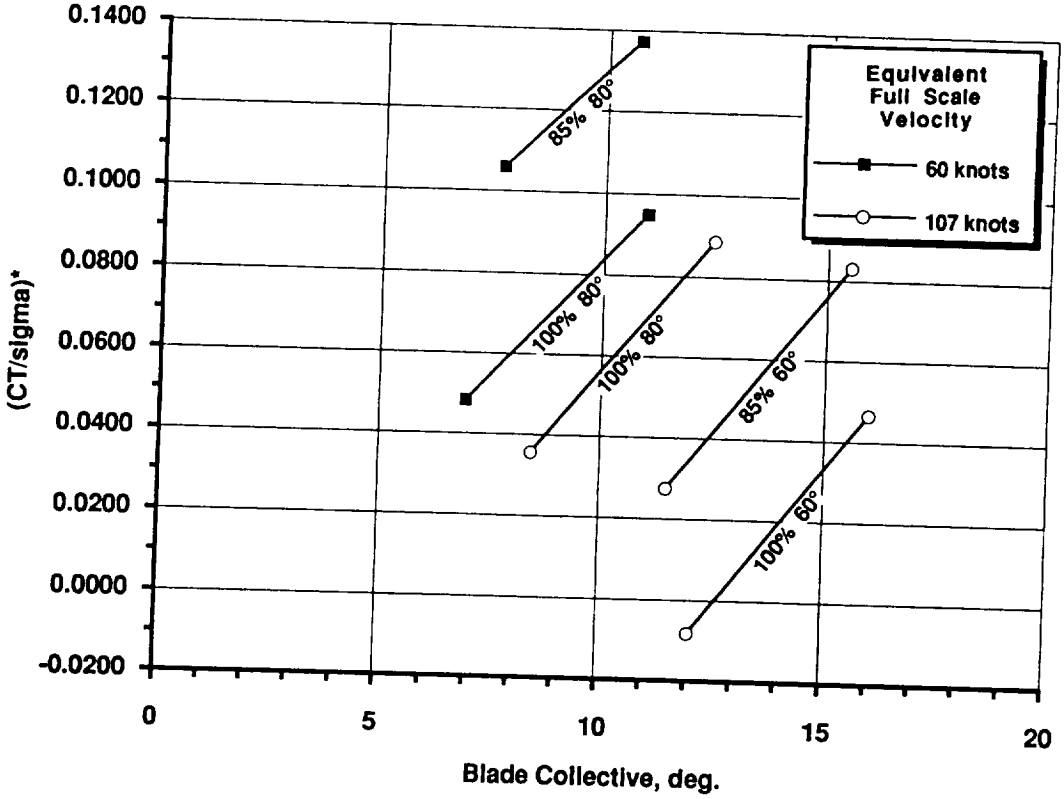

Figure 48. VDTR Collective Control Power

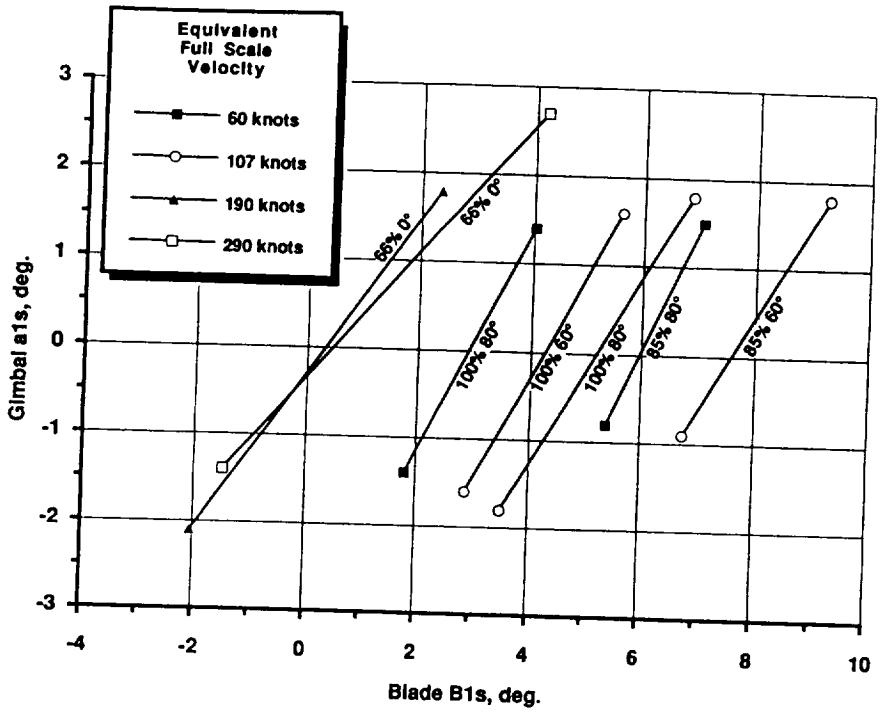

Figure 49a. VDTR Pitch Control Power, a1s versus B1s

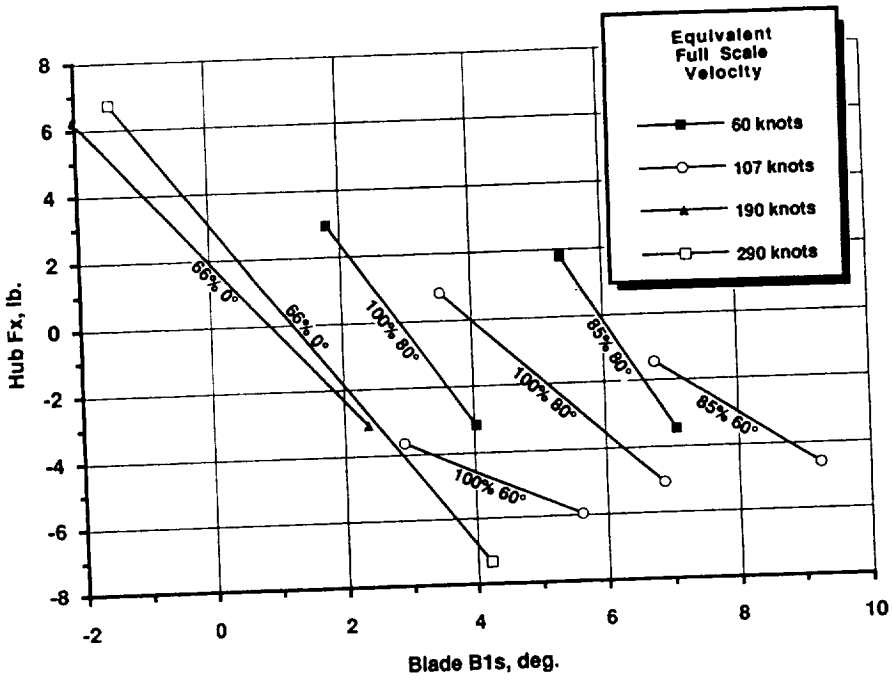

Figure 49b. VDTR Pitch Control Power, Fx versus B1s

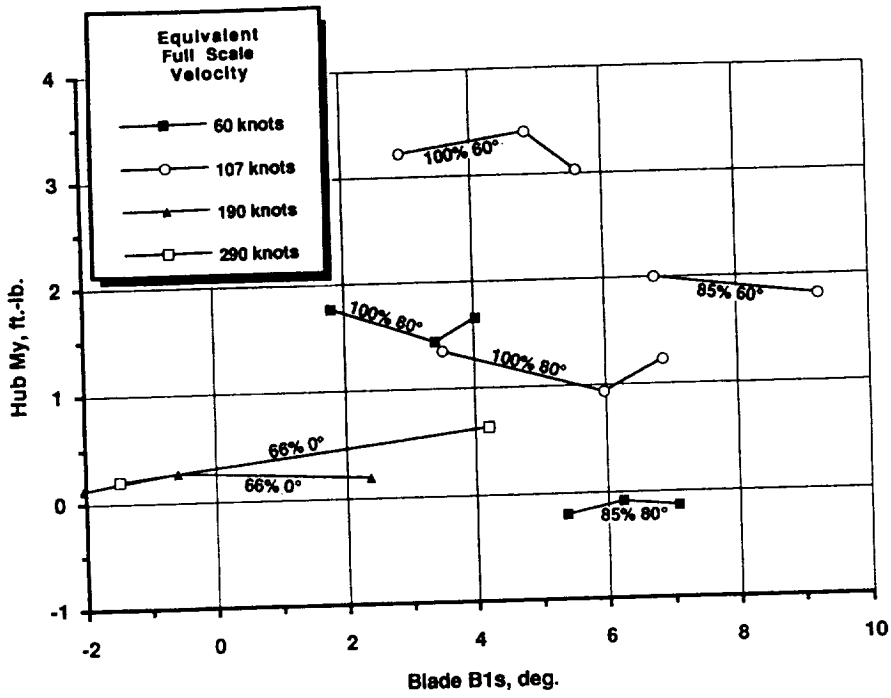

Figure 49c. VDTR Pitch Control Power, My versus B1s

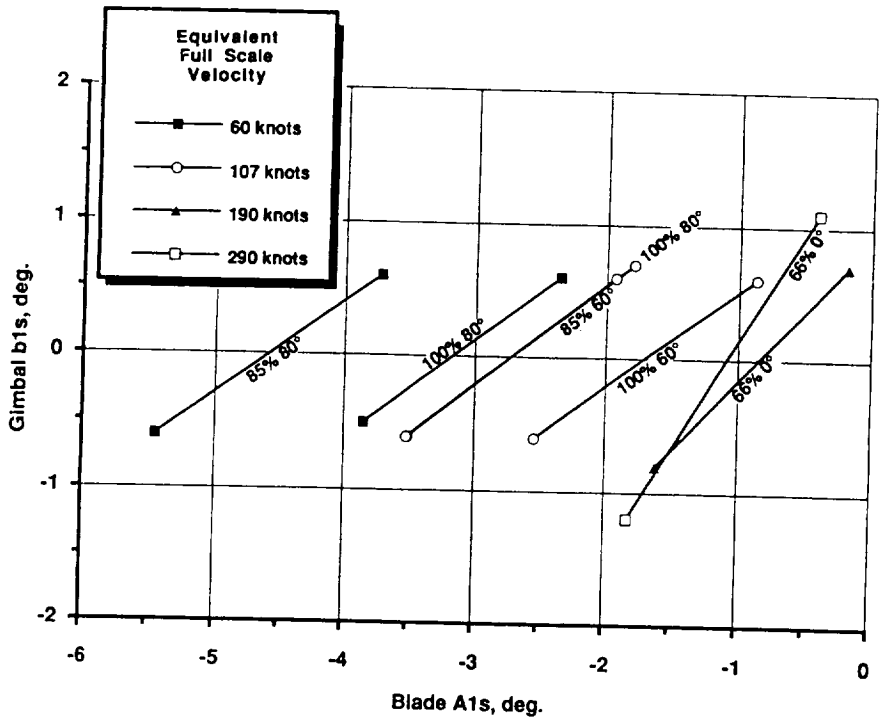

Figure 50a. VDTR Lateral Control Power, b1s versus A1s

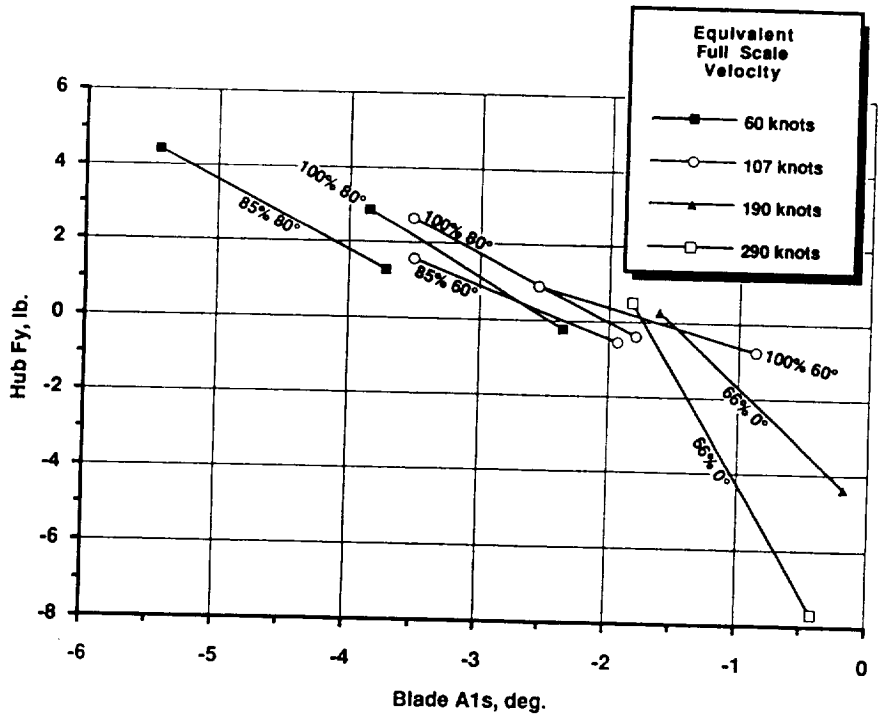

Figure 50b. VDTR Lateral Control Power, Fy versus A1s

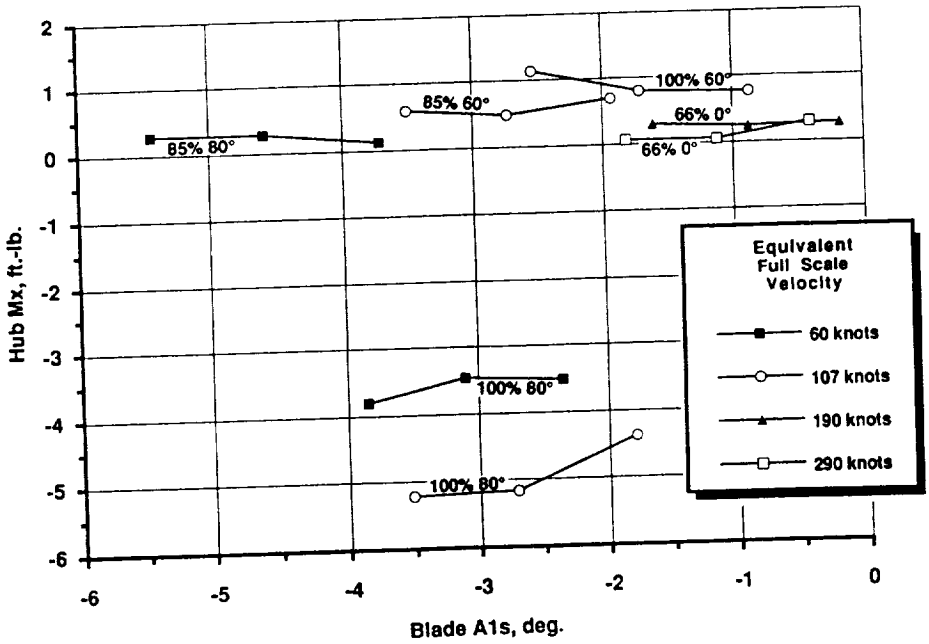

Figure 50c. VDTR Lateral Control Power, Mx versus A1s

CONCLUSIONS

This wind tunnel test successfully demonstrated the feasibility of the Variable Diameter Rotor for tiltrotor aircraft with the demonstration of satisfactory propulsive force and acceptable blade loads during tiltrotor conversion with no instabilities. A wide range of test points were taken in hover, conversion, and cruise modes.

In the conversion regime, a high propulsive force was demonstrated for sustained flight with acceptable blade loads. The measured edgewise loads were higher than the flatwise loads in the maximum diameter rotor configuration. In cruise, the edgewise loads were low and remained roughly constant with tunnel velocity while the flatwise loads increased with velocity.

Although this model was not Mach-scaled, the measured cruise efficiencies show promise for the VDTR concept. Furthermore, the hover F.M. values showed good hover performance at levels better than predicted.

The VDTR demonstrated excellent gust response capabilities. The horizontal gust response correlated well with predictions revealing less than half the response to turbulence of the conventional civil tiltrotor.

RECOMMENDATIONS

Additional testing of the existing VDTR model should be performed on a hover stand with the rotor plane oriented horizontally to verify the 1P gravity effect observed with the wind tunnel installation. Future work is also recommended in the areas of acoustics and performance. An important advantage of the VDTR is expected low internal and external noise and improved Category A capability. A Mach-scaled acoustic and performance study of the VDTR is the next step in fully defining the benefits of this rotor for an advanced tiltrotor vehicle.

REFERENCES

1. Fradenburgh, E., Murrill, R., and Kiely, E.,"Dynamic Model Wind Tunnel Tests of a Variable Diameter, Telescoping Blade Rotor System (TRAC Rotor)," Sikorsky Aircraft, USAAMRDL TR 73-32, July 1973.

2. Dunford, P., Lunn, K., Magnuson, R., and Marr, R.,"The V-22 Osprey - A Significant Flight Test Challenge," 16th European Rotorcraft Forum, Glascow, Scotland, Sept. 1990.

3. Maisel, M., et al.,"Army/NASA XV-15 Tiltrotor Familiarization Document," NASA TM X-62,407, Jan 1975.

4. Gessow, A., and Myers, G.C., "Aerodynamics of the Helicopter," Frederick Ungar Publishing Co., 1967.

5. Bliss, D., Wachspress, D., and Quackenbush, T., "A New Approach to the Free Wake Problem for Hovering Rotors," American Helicopter Society 41st Annual Forum, Ft. Worth, Texas, May 1985.

6. Shanley, J., Moffitt, R., and Davis, S.J., "Systematic Correlation and Evaluation of the EHPIC Hover Analysis," American Helicopter Society 46th Annual Forum, May 1990.

7. Fradenburgh, E., and Matuska, D., "Advancing Tiltrotor State-of-the-Art with Variable Diameter Rotors," American Helicopter Society 48th Annual Forum, Washington, DC, June 1992.

APPENDIX A

Model Test Conditions

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
		24.1																		
		24.2																		
2	12.2	25.1	54.9	2106	9.6	89.9	53.3	0.002375	1114	792.8	340.4	2115	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
	12.3	25.2	55.0	2106	9.7	90.1	53.4	0.002376	1114	790.4	339.4	2115	2150	0.0	45	60.1	-29.9	100.0	4.1	0.0856
	12.4		55.0	2106	9.6	90.1	53.4	0.002376	1114	791.0	339.6	2115	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
8	12.5	25.3	55.1	2106	9.8	90.7	53.7	0.002375	1114	793.9	340.9	2115	2150	0.0	45	60.1	-29.9	100.0	4.1	0.0856
9	12.6	25.4	55.1	2106	9.7	90.4	53.6	0.002375	1114	791.6	339.9	2115	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
10	12.7	25.5	55.1	2106	9.7	90.5	53.6	0.002375	1114	792.2	340.1	2115	2150	0.0	45	60.1	-29.9	100.0	4.1	0.0856
11	12.8	25.6	55.0	2106	9.6	90.1	53.4	0.002375	1114	792.2	340.1	2115	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
12	12.9	25.7	55.1	2106	9.6	89.9	53.2	0.002375	1114	793.4	340.6	2115	2150	0.0	45	60.1	-29.9	100.0	4.1	0.0856
18	12.10	28.8	55.1	2105	9.8	90.7	53.7	0.002375	1114	791.6	339.9	2115	2118	0.0	45	59.9	-30.1	100.0	4.1	0.0856
19	12.11	25.9	55.0	2107	9.8	90.6	53.7	0.002376	1114	792.2	340.1	2115	2118	0.0	45	60.0	-30.0	100.0	4.1	0.0856
20	12.12	25.10	55.0	2107	9.7	90.3	53.5	0.002377	1114	791.0	339.6	2116	2150	0.0	45	59.8	-30.2	100.0	4.1	0.0856
21	12.13	25.11	54.9	2107	9.5	89.3	52.9	0.002377	1114	791.6	339.9	2116	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
22	12.14	25.12	54.9	2107	9.4	89.1	52.8	0.002377	1114	792.2	340.1	2116	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
26	12.15	25.13	54.8	2107	9.5	89.4	53.0	0.002378	1113	792.8	340.4	2116	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
27	12.16	25.14	54.8	2107	9.4	88.9	52.7	0.002378	1113	793.4	340.6	2116	2150	0.0	45	60.1	-29.9	100.0	4.1	0.0856
28	12.17	25.15	54.8	2107	9.6	89.7	53.1	0.002378	1113	793.9	340.9	2116	2151	0.0	45	60.1	-29.9	100.0	4.1	0.0856
1	12.18	25.16	54.5	2107	9.6	89.9	53.2	0.002379	1113	792.2	340.1	2116	2118	0.0	45	80.0	-10.0	100.0	4.1	0.0856
	12.19	25.17	54.5	2107	9.6	89.7	53.1	0.002379	1113	792.8	340.4	2116	2150	0.0	45	80.0	-10.0	100.0	4.1	0.0856
	12.20	25.18	54.4	2107	9.7	90.2	53.5	0.002380	1113	792.2	340.1	2116	2150	0.0	45	80.0	-10.0	100.0	4.1	0.0856
	12.21	25.19	54.3	2107	9.7	90.4	53.6	0.002380	1113	793.9	340.9	2116	2150	0.0	45	80.0	-10.0	100.0	4.1	0.0856
	12.22	25.20	54.1	2106	9.8	90.8	53.8	0.002381	1113	792.8	340.4	2116	2150	0.0	45	80.0	-10.0	100.0	4.1	0.0856
	12.23	25.21	54.0	2107	9.8	90.5	53.6	0.002383	1112	792.2	340.1	2117	2150	0.0	45	80.1	-9.9	100.0	4.1	0.0856
3	12.24	25.22	53.9	2108	9.5	89.3	52.9	0.002383	1112	792.8	340.4	2117	2151	0.0	45	80.0	-10.0	100.0	4.1	0.0856
4	12.25	25.23	53.8	2108	9.5	89.3	52.9	0.002384	1112	792.8	340.4	2117	2151	0.0	45	80.2	-9.8	100.0	4.1	0.0856
5	12.26	25.24	53.8	2108	9.6	89.5	53.0	0.002384	1112	792.8	340.4	2117	2151	0.0	45	80.0	-10.0	100.0	4.1	0.0856
6	12.27	25.25	53.7	2108	9.4	88.7	52.6	0.002384	1112	792.2	340.1	2117	2151	0.0	45	80.2	-9.8	100.0	4.1	0.0856
7	12.28	25.26	53.7	2108	9.2	87.9	52.1	0.002385	1112	795.1	341.4	2117	2120	0.0	45	80.0	-10.0	100.0	4.1	0.0856
13	12.29	25.27	53.7	2108	9.3	88.2	52.3	0.002385	1112	791.6	339.9	2117	2120	0.0	45	80.1	-9.9	100.0	4.1	0.0856
14	12.30	25.28	53.7	2108	9.2	87.8	52.0	0.002385	1112	792.8	340.4	2117	2152	0.0	45	80.1	-9.9	100.0	4.1	0.0856
15	12.31		53.6	2108	9.2	87.8	52.0	0.002385	1112	793.4	340.6	2117	2152	0.0	45	80.1	-9.9	100.0	4.1	0.0856
16	12.32	25.29	53.5	2108	9.2	87.6	51.9	0.002386	1112	791.6	339.9	2117	2152	0.0	45	80.2	-9.8	100.0	4.1	0.0856
17	12.33	25.30	53.5	2108	9.2	87.7	51.9	0.002386	1112	793.4	340.6	2117	2152	0.0	45	80.0	-10.0	100.0	4.1	0.0856
23	12.34	25.31	53.5	2108	9.3	88.2	52.3	0.002386	1112	792.8	340.4	2117	2153	0.0	45	80.2	-9.8	100.0	4.1	0.0856
24	12.35	25.32	53.4	2109	9.5	89.0	52.8	0.002387	1112	792.8	340.4	2117	2153	0.0	45	80.0	-10.0	100.0	4.1	0.0856
25	12.36	25.33	53.4	2109	9.5	89.3	52.9	0.002387	1112	792.2	340.1	2118	2152	0.0	45	80.1	-9.9	100.0	4.1	0.0856
30	12.37	25.34	53.5	2106	12.5	102.3	60.6	0.002385	1112	793.4	340.6	2118	2152	0.0	45	80.1	-9.9	100.0	4.1	0.0856
	12.38	25.35	53.5	2106	12.5	102.6	60.8	0.002383	1112	790.4	339.4	2118	2150	0.0	45	59.9	-30.1	100.0	4.1	0.0856
	12.39	25.36	53.5	2106	12.6	102.8	60.9	0.002383	1112	792.8	340.4	2118	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
	12.40	25.37	53.5	2106	12.5	102.4	60.7	0.002384	1112	791.6	339.9	2118	2150	0.0	45	60.0	-30.0	100.0	4.1	0.0856
																60.1	-29.9	100.0	4.1	0.0856

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
35	12.42	26.1	46.6	2121	9.8	89.8	53.2	0.002436	1104	792.8	289.3	2130	2172	0.0	45	70.0	-20.0	85.0	3.5	0.1028
	12.43	26.2	46.6	2121	9.8	89.6	53.1	0.002436	1104	792.8	289.3	2130	2173	0.0	45	70.0	-20.0	85.0	3.5	0.1028
	12.44	26.3	47.0	2121	9.8	89.9	53.3	0.002434	1104	793.4	289.5	2131	2174	0.0	45	70.1	-19.9	85.0	3.5	0.1028
	12.45	26.4	48.0	2121	9.6	88.9	52.7	0.002430	1105	793.4	289.5	2131	2175	0.0	45	70.1	-19.9	85.0	3.5	0.1028
	12.46	26.5	48.6	2121	9.7	89.5	53.0	0.002426	1106	789.8	288.2	2130	2174	0.0	45	70.0	-20.0	85.0	3.5	0.1028
		26.6																		
36	12.47	26.7	49.1	2121	9.6	89.2	52.8	0.002424	1107	791.6	288.9	2130	2174	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.48	26.8	49.2	2121	9.7	89.7	53.1	0.002423	1107	793.9	289.7	2130	2174	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.49	26.9																		
	12.50	26.10	49.5	2121	9.7	89.6	53.1	0.002422	1107	792.8	289.3	2131	2173	0.0	45	60.1	-29.9	85.0	3.5	0.1028
	12.51	26.11	49.6	2121	9.7	89.7	53.2	0.002421	1107	793.4	289.5	2131	2173	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.52	26.12	49.8	2121	9.7	89.6	53.1	0.002420	1107	791.0	288.7	2130	2172	0.0	45	60.1	-29.9	85.0	3.5	0.1028
37	12.53	26.13	49.9	2121	9.6	89.2	52.9	0.002420	1108	792.2	289.1	2130	2172	0.0	45	60.0	-30.0	85.0	3.5	0.1028
38	12.54	26.14	50.0	2121	9.6	89.3	52.9	0.002419	1108	792.8	289.3	2130	2172	0.0	45	60.1	-29.9	85.0	3.5	0.1028
39	12.55	26.15	50.1	2121	9.7	89.4	52.9	0.002419	1108	793.9	289.7	2130	2172	0.0	45	60.1	-29.9	85.0	3.5	0.1028
40	12.56	26.16	50.2	2121	9.7	89.4	52.9	0.002418	1108	791.6	288.9	2130	2172	0.0	45	60.0	-30.0	85.0	3.5	0.1028
41	12.57	26.17	50.3	2121	9.7	89.4	53.0	0.002418	1108	791.6	288.9	2130	2172	0.0	45	60.0	-30.0	85.0	3.5	0.1028
42	12.58	26.18																		
	12.59	26.19																		
	12.60	26.20	50.6	2120	9.7	89.8	53.2	0.002416	1108	792.2	289.1	2130	2171	0.0	45	60.0	-30.0	85.0	3.5	0.1028
43	12.61	26.21	50.6	2120	9.7	89.6	53.1	0.002415	1108	792.2	289.1	2130	2170	0.0	45	60.1	-29.9	85.0	3.5	0.1028
44	12.62	26.22	50.7	2120	9.7	89.6	53.1	0.002415	1109	792.2	289.1	2130	2170	0.0	45	60.0	-30.0	85.0	3.5	0.1028
45	12.63	26.23	50.8	2120	9.6	89.2	52.9	0.002415	1109	792.8	289.3	2130	2170	0.0	45	60.0	-30.0	85.0	3.5	0.1028
47	12.64	26.24	50.8	2120	9.7	89.5	53.0	0.002414	1109	792.8	289.3	2130	2170	0.0	45	60.0	-30.0	85.0	3.5	0.1028
48	12.65	26.25	50.9	2120	9.7	89.6	53.1	0.002414	1109	789.8	288.2	2130	2170	0.0	45	60.0	-30.0	85.0	3.5	0.1028
49	12.66	26.26	50.9	2120	9.7	89.8	53.2	0.002414	1109	793.9	289.7	2130	2170	0.0	45	60.1	-29.9	85.0	3.5	0.1028
51	12.68	27.1	50.9	2127	3.2	51.2	30.3	0.002422	1109	792.8	289.3	2130	2127	0.0	45	60.1	-29.9	85.0	3.5	0.1028
	12.69	27.2	50.8	2127	3.3	52.1	30.8	0.002422	1109	792.2	289.1	2130	2161	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.70	27.3	50.8	2127	3.3	52.2	30.9	0.002422	1109	792.8	289.3	2130	2162	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.71	27.4	50.8	2127	3.1	50.8	30.1	0.002422	1109	792.2	289.1	2130	2163	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.72	27.5	50.7	2127	3.1	51.0	30.2	0.002423	1109	792.8	289.3	2130	2164	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.73	27.6	50.7	2127	3.2	51.3	30.4	0.002423	1108	791.0	288.7	2130	2164	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.74	27.7	50.6	2127	3.1	50.6	30.0	0.002423	1108	791.6	288.9	2130	2165	0.0	45	60.0	-30.0	85.0	3.5	0.1028
	12.75	27.8	50.6	2127	3.1	50.4	29.9	0.002423	1108	792.8	289.3	2130	2165	0.0	45	60.1	-29.9	85.0	3.5	0.1028
50	12.76	27.9	50.5	2127	3.3	52.3	31.0	0.002423	1108	792.8	289.3	2130	2166	0.0	45	80.0	-10.0	85.0	3.5	0.1028
	12.77	27.10	50.4	2127	3.2	51.3	30.4	0.002424	1108	792.2	289.1	2130	2166	0.0	45	80.0	-10.0	85.0	3.5	0.1028
	12.78	27.11	50.4	2127	3.2	51.1	30.3	0.002424	1108	793.4	289.5	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
52	12.79	27.12	50.4	2127	3.1	51.0	30.2	0.002424	1108	792.8	289.3	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
53	12.80	27.13	50.4	2127	3.2	51.0	30.2	0.002424	1108	791.0	288.7	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
54	12.81	27.14	50.3	2127	3.2	51.2	30.3	0.002424	1108	792.8	289.3	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
		27.15																		

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
55	12.82	27.16	50.3	2127	3.2	51.2	30.3	0.002424	1108	792.2	289.1	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
57	12.83	27.17	50.2	2127	3.2	51.0	30.2	0.002425	1108	792.2	289.1	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
58	12.84	27.18	50.2	2127	3.2	51.1	30.3	0.002425	1108	792.8	289.3	2130	2166	0.0	45	80.1	-9.9	85.0	3.5	0.1028
		27.19																		
59	12.85	27.20	50.1	2127	3.2	51.3	30.4	0.002425	1108	793.9	289.7	2130	2167	0.0	45	80.2	-9.8	85.0	3.5	0.1028
60	12.86	27.21	50.2	2127	3.2	51.4	30.4	0.002425	1108	791.0	288.7	2130	2167	0.0	45	80.1	-9.9	85.0	3.5	0.1028
62	12.87	27.22																		
	12.88	27.23	50.2	2127	3.2	51.4	30.4	0.002425	1108	793.4	289.5	2130	2167	0.0	45	80.2	-9.8	85.0	3.5	0.1028
63	12.89	27.24	50.1	2127	3.2	51.6	30.6	0.002426	1108	792.2	289.1	2130	2167	0.0	45	80.2	-9.8	85.0	3.5	0.1028
64	12.90	27.25	50.1	2127	3.2	51.5	30.5	0.002426	1108	791.0	288.7	2130	2167	0.0	45	80.2	-9.8	85.0	3.5	0.1028
66	13.1	28.1	50.4	2127	3.3	52.5	31.1	0.002424	1108	792.8	340.4	2130	2127	0.0	45	60.0	-30.0	100.0	4.1	0.0856
	13.3	28.2	50.3	2127	3.3	52.3	31.0	0.002424	1108	792.2	340.1	2130	2129	0.0	45	60.0	-30.0	100.0	4.1	0.0856
	13.4	28.3	50.2	2127	3.3	51.9	30.7	0.002425	1108	793.9	340.9	2130	2129	0.0	45	60.1	-29.9	100.0	4.1	0.0856
	13.5	28.4	50.2	2127	3.2	51.2	30.4	0.002425	1108	791.0	339.6	2130	2130	0.0	45	60.1	-29.9	100.0	4.1	0.0856
	13.6	28.5	50.2	2127	3.2	51.1	30.3	0.002425	1108	792.2	340.1	2130	2131	0.0	45	60.1	-29.9	100.0	4.1	0.0856
65	13.7	28.6	50.2	2127	3.1	50.8	30.1	0.002425	1108	792.8	340.4	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
	13.8	28.7	50.1	2127	3.1	50.8	30.1	0.002425	1108	792.8	340.4	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
	13.9	28.8	50.1	2127	3.3	51.9	30.7	0.002426	1108	792.8	340.4	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
	13.10	28.9	50.1	2127	3.3	52.1	30.9	0.002425	1108	791.0	339.6	2130	2101	0.0	45	80.1	-9.9	100.0	4.1	0.0856
	13.11	28.10	50.1	2127	3.2	51.7	30.7	0.002426	1108	793.4	340.6	2130	2131	0.0	45	80.0	-10.0	100.0	4.1	0.0856
67	13.12	28.11	50.1	2127	3.2	51.4	30.5	0.002425	1108	791.0	339.6	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
68	13.13	28.12	50.1	2127	3.2	51.3	30.4	0.002425	1108	791.6	339.9	2130	2131	0.0	45	80.0	-10.0	100.0	4.1	0.0856
69	13.14	28.13	50.1	2127	3.2	51.4	30.5	0.002425	1108	792.8	340.4	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
70	13.15	28.14	50.1	2127	3.2	51.4	30.5	0.002426	1108	793.9	340.9	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
71	13.16	28.15	50.1	2127	3.2	51.3	30.4	0.002426	1108	792.8	340.4	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
72	13.17	28.16	50.0	2127	3.2	51.5	30.5	0.002426	1108	792.8	340.4	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
73	13.18	28.17	50.0	2127	3.2	51.7	30.6	0.002426	1108	791.0	339.6	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
74	13.19	28.18	50.0	2127	3.2	51.5	30.5	0.002426	1108	792.2	340.1	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
75	13.20	28.19	50.0	2127	3.2	51.6	30.6	0.002426	1108	792.8	340.4	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
76	13.21	28.20	50.0	2127	3.2	51.7	30.7	0.002426	1108	792.2	340.1	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
77	13.22	28.21	49.9	2127	3.3	51.8	30.7	0.002426	1108	792.2	340.1	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
78	13.23	28.22	49.9	2127	3.3	51.8	30.7	0.002426	1108	791.6	339.9	2130	2131	0.0	45	80.1	-9.9	100.0	4.1	0.0856
79	13.24	28.23	49.9	2127	3.3	51.8	30.7	0.002426	1108	793.9	340.9	2130	2131	0.0	45	80.2	-9.8	100.0	4.1	0.0856
80	13.25	28.24	50.0	2130	0.0	0.0	0.0	0.002430	1108	792.2	340.1	2130	2132	0.0	45	80.1	-9.9	100.0	4.1	0.0856
81	13.26	28.25	50.0	2130	0.0	0.0	0.0	0.002430	1108	793.4	340.6	2130	2133	0.0	45	90.1	0.1	100.0	4.1	0.0856
82	13.27	28.26	49.8	2130	0.0	0.0	0.0	0.002430	1108	793.4	340.6	2130	2133	0.0	45	90.1	0.1	100.0	4.1	0.0856
80A	13.29	29.1	47.4	2129	9.0	85.6	50.7	0.002441	1105	793.9	225.9	2138	2134	0.0	45	90.2	0.2	100.0	4.1	0.0856
	13.30	29.2	47.5	2129	9.0	85.7	50.8	0.002441	1105	793.4	225.7	2138	2176	0.0	0	30.0	-60.0	66.3	2.7	0.1320
	13.31	29.3	47.6	2129	9.0	85.9	50.9	0.002440	1105	791.6	225.2	2138	2176	0.0	0	30.1	-59.9	66.3	2.7	0.1320
	13.32	29.4	47.7	2129	9.0	86.0	50.9	0.002440	1105	792.8	225.5	2138	2176	0.0	0	30.0	-60.0	66.3	2.7	0.1320
	13.33	29.5	47.8	2129	9.0	86.1	51.0	0.002439	1105	792.2	225.4	2138	2176	0.0	0	30.0	-60.0	66.3	2.7	0.1320

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
		29.6																		
81A	13.34	29.7	48.1	2129	9.0	86.0	51.0	0.002438	1106	792.8	225.5	2138	2175	0.0	0	19.9	-70.1	66.3	2.7	0.1320
	13.35	29.8	48.1	2129	9.0	85.9	50.9	0.002438	1106	791.6	225.2	2138	2175	0.0	0	19.9	-70.1	66.3	2.7	0.1320
	13.36	29.9	48.1	2129	8.9	85.6	50.7	0.002438	1106	792.8	225.5	2138	2175	0.0	0	19.9	-70.1	66.3	2.7	0.1320
	13.37	29.10	48.2	2129	9.0	85.7	50.8	0.002438	1106	792.2	225.4	2138	2175	0.0	0	19.9	-70.1	66.3	2.7	0.1320
	13.38	29.11	48.3	2129	9.0	85.8	50.8	0.002437	1106	793.9	225.9	2138	2175	0.0	0	20.0	-70.0	66.3	2.7	0.1320
	13.39	29.12	48.3	2129	9.0	85.9	50.9	0.002437	1106	791.6	225.2	2138	2175	0.0	0	20.0	-70.0	66.3	2.7	0.1320
	13.40	29.13	48.4	2129	9.0	86.1	51.0	0.002437	1106	792.2	225.4	2138	2175	0.0	0	20.1	-69.9	66.3	2.7	0.1320
	13.41	29.14	48.4	2129	9.0	86.1	51.0	0.002437	1106	792.2	225.4	2138	2175	0.0	0	20.1	-69.9	66.3	2.7	0.1320
	13.42	29.15	48.5	2130	8.9	85.6	50.7	0.002437	1106	792.2	225.4	2138	2175	0.0	0	20.1	-69.9	66.3	2.7	0.1320
81B	13.43	29.16	55.4	2109	30.6	160.4	95.0	0.002379	1114	793.9	225.9	2139	2113	0.0	0	0.0	-90.0	66.3	2.7	0.1320
	13.44	29.17	55.7	2109	30.6	160.5	95.1	0.002377	1114	792.2	225.4	2139	2112	0.0	0	0.1	-89.9	66.3	2.7	0.1320
	13.45	29.18	56.1	2109	30.7	160.8	95.3	0.002375	1114	792.2	225.4	2139	2111	0.0	0	0.1	-89.9	66.3	2.7	0.1320
	13.46	29.19	56.5	2109	30.6	160.6	95.2	0.002374	1115	791.6	225.2	2139	2111	0.0	0	0.1	-89.9	66.3	2.7	0.1320
	13.47	29.20	56.8	2109	30.6	160.7	95.2	0.002372	1115	792.2	225.4	2139	2110	0.0	0	0.2	-89.8	66.3	2.7	0.1320
	13.48	29.21	57.2	2109	30.6	160.7	95.2	0.002370	1116	791.0	225.0	2139	2109	0.0	0	0.2	-89.8	66.3	2.7	0.1320
87	13.49	29.22	57.8	2109	30.6	160.7	95.2	0.002367	1116	792.8	225.5	2139	2107	0.0	0	0.1	-89.9	66.3	2.7	0.1320
88	13.50	29.23	58.2	2109	30.5	160.7	95.2	0.002365	1117	791.6	225.2	2139	2106	0.0	0	0.1	-89.9	66.3	2.7	0.1320
89	13.51	29.24	58.4	2109	30.5	160.7	95.2	0.002364	1117	791.0	225.0	2139	2106	0.0	0	0.2	-89.8	66.3	2.7	0.1320
90	13.52	29.25	58.7	2108	30.5	160.7	95.2	0.002362	1117	791.6	225.2	2138	2105	0.0	0	0.1	-89.9	66.3	2.7	0.1320
91	13.53	29.26	59.0	2108	30.5	160.8	95.3	0.002361	1118	791.6	225.2	2138	2104	0.0	0	0.1	-89.9	66.3	2.7	0.1320
92	13.54	29.27	59.2	2108	30.5	160.8	95.2	0.002360	1118	792.2	225.4	2138	2104	0.0	0	0.1	-89.9	66.3	2.7	0.1320
93	13.55	29.28	59.5	2108	30.5	160.8	95.3	0.002359	1118	791.6	225.2	2138	2103	0.0	0	0.1	-89.9	66.3	2.7	0.1320
94	13.56	29.29	59.7	2108	30.5	161.0	95.4	0.002358	1119	792.2	225.4	2138	2103	0.0	0	0.1	-89.9	66.3	2.7	0.1320
		30.1																		
95	13.59	30.2	70.8	2071	67.8	244.6	144.9	0.002266	1130	792.8	225.5	2138	2049	0.0	0	0.3	-89.7	66.3	2.7	0.1320
	13.60	30.3	73.0	2072	67.6	244.7	145.0	0.002257	1133	792.2	225.4	2139	2086	0.0	0	0.1	-89.9	66.3	2.7	0.1320
	13.61	30.4	74.5	2072	67.5	244.9	145.1	0.002250	1135	792.2	225.4	2138	2084	0.0	0	0.1	-89.9	66.3	2.7	0.1320
101	13.62	30.5	76.7	2072	67.4	245.3	145.3	0.002240	1137	792.2	225.4	2139	2081	0.0	0	0.1	-89.9	66.3	2.7	0.1320
95A	13.63	30.6	78.4	2072	67.1	245.2	145.3	0.002233	1139	792.8	225.5	2138	2032	0.0	0	0.1	-89.9	66.3	2.7	0.1320
101A	13.64	30.7	79.8	2072	67.1	245.5	145.5	0.002226	1141	791.0	225.0	2139	2029	0.0	0	0.1	-89.9	66.3	2.7	0.1320
102	13.65	30.8	80.7	2072	67.1	245.8	145.6	0.002222	1142	792.8	225.5	2139	2075	0.0	0	0.2	-89.8	66.3	2.7	0.1320
103	13.66	30.9	81.8	2073	66.6	245.1	145.2	0.002218	1143	792.8	225.5	2139	2074	0.0	0	0.0	-90.0	66.3	2.7	0.1320
104	13.67	30.10	82.5	2073	66.6	245.3	145.3	0.002215	1144	790.4	224.9	2139	2072	0.0	0	0.2	-89.8	66.3	2.7	0.1320
106	13.68	30.11	83.3	2073	66.5	245.2	145.3	0.002211	1145	793.9	225.9	2139	2071	0.0	0	0.0	-90.0	66.3	2.7	0.1320
107	13.69	30.12	84.0	2073	66.4	245.2	145.3	0.002208	1146	792.8	225.5	2139	2070	0.0	0	0.1	-89.9	66.3	2.7	0.1320
108	13.70	30.13	84.8	2073	66.3	245.3	145.4	0.002204	1147	793.4	225.7	2139	2069	0.0	0	0.0	-90.0	66.3	2.7	0.1320
109	13.72	31.1	59.9	2100	30.4	160.8	95.3	0.002348	1119	794.5	226.0	2130	2118	0.0	0	0.0	-88.5	66.3	2.7	0.1320
110	13.73	31.2	61.1	2100	30.2	160.5	95.1	0.002342	1120	793.9	225.9	2130	2083	1.5	0	0.0	-87.0	66.3	2.7	0.1320
111	13.74	31.3	61.7	2100	30.2	160.5	95.1	0.002340	1121	791.6	225.2	2130	2083	3.0	0	0.0	-91.5	66.3	2.7	0.1320
112	13.75	31.4	62.1	2100	30.2	160.7	95.2	0.002338	1121	793.4	225.7	2130	2083	-1.5	0					

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec	Rotor RPM 1/min.	Blade Tip Speed ft./sec	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
113	13.76	31.5	62.5	2100	30.0	160.4	95.0	0.002336	1122	792.8	225.5	2130	2082	-3.0	0	0.0	-93.0	66.3	2.7	0.1320
114	13.77	31.6	77.8	2064	67.5	246.2	145.9	0.002228	1138	789.8	224.7	2131	2018	0.0	0	0.1	-89.9	66.3	2.7	0.1320
115	13.78	31.7	79.4	2064	67.4	246.4	146.0	0.002220	1140	791.6	225.2	2131	2015	1.0	0	0.2	-88.8	66.3	2.7	0.1320
116	13.79	31.8	80.7	2064	67.2	246.3	146.0	0.002215	1141	791.6	225.2	2131	2013	1.3	0	0.2	-88.5	66.3	2.7	0.1320
117	13.80	31.9	82.0	2064	67.3	246.8	146.2	0.002209	1143	792.2	225.4	2131	2010	-1.0	0	0.1	-90.9	66.3	2.7	0.1320
118	13.81	31.10	83.2	2064	67.0	246.6	146.1	0.002204	1144	791.0	225.0	2131	2007	-2.0	0	0.1	-91.9	66.3	2.7	0.1320
128	13.82	31.11	84.8	2065	66.9	246.9	146.3	0.002197	1146	792.8	225.5	2131	2003	0.0	0	0.2	-89.8	66.3	2.7	0.1320
129	13.83	31.12	85.8	2065	66.7	246.6	146.1	0.002193	1147	790.4	224.9	2131	2051	0.0	0	1.2	-88.8	66.3	2.7	0.1320
130	13.84	31.13	86.7	2066	66.6	246.7	146.2	0.002189	1149	790.4	224.9	2131	2051	0.0	0	1.8	-88.2	66.3	2.7	0.1320
123	13.85		89.8	2066	66.2	246.8	146.2	0.002175	1152	791.6	225.2	2132	2044	0.0	0	0.1	-89.9	66.3	2.7	0.1320
122	13.86	31.14	90.8	2074	58.8	232.4	137.7	0.002178	1154	792.2	225.4	2132	2049	0.0	0	0.1	-89.9	66.3	2.7	0.1320
124	13.87	31.15	90.3	2082	50.9	215.7	127.8	0.002188	1153	792.8	225.5	2132	2057	0.0	0	0.1	-89.9	66.3	2.7	0.1320
122A	13.88	31.16	90.9	2075	58.3	231.5	137.2	0.002178	1154	792.8	225.5	2133	2049	0.0	0	0.0	-90.0	66.3	2.7	0.1320
122B	13.89		92.9	2075	58.2	231.5	137.2	0.002170	1156	791.0	225.0	2133	2046	0.0	0	0.1	-89.9	66.3	2.7	0.1320
124A	13.90	31.17	92.7	2081	52.2	219.0	129.7	0.002176	1156	792.8	225.5	2132	2051	0.0	0	0.1	-89.9	66.3	2.7	0.1320
125	13.91	31.18	88.4	2105	28.7	160.9	95.3	0.002219	1151	792.8	225.5	2133	2079	0.0	0	0.0	-90.0	66.3	2.7	0.1320
126	13.92		87.5	2105	28.7	160.7	95.2	0.002223	1150	792.8	225.5	2133	2080	0.0	0	1.1	-88.9	66.3	2.7	0.1320
127	13.93	31.19	87.0	2105	28.8	160.8	95.3	0.002225	1150	792.8	225.5	2133	2080	0.0	0	2.1	-87.9	66.3	2.7	0.1320
119	13.94	31.20	84.5	2110	23.6	145.0	85.9	0.002242	1147	791.6	225.2	2133	2090	0.0	0	0.2	-89.8	66.3	2.7	0.1320
120	13.95	31.21	83.2	2105	28.9	160.5	95.1	0.002243	1145	791.0	225.0	2133	2087	0.0	0	0.1	-89.9	66.3	2.7	0.1320
121	13.96	31.22	81.9	2115	19.0	129.7	76.8	0.002260	1144	792.2	225.4	2133	2099	0.0	0	0.1	-89.9	66.3	2.7	0.1320
131	14.1	32.1	63.4	2123	8.3	83.7	49.6	0.002358	1123	791.6	225.2	2131	2175	0.0	0	20.0	-70.0	66.3	2.7	0.1320
132	14.2		63.4	2123	8.3	83.8	49.7	0.002358	1123	791.0	225.0	2131	2176	1.0	0	19.8	-69.2	66.3	2.7	0.1320
133	14.3	32.2	63.4	2123	8.3	83.8	49.6	0.002358	1122	792.8	225.5	2131	2142	2.0	0	19.9	-68.1	66.3	2.7	0.1320
133A	14.4	32.3	63.3	2123	8.3	83.8	49.6	0.002358	1122	791.6	225.2	2131	2177	5.0	0	19.9	-65.1	66.3	2.7	0.1320
134	14.5	32.4	63.2	2123	8.3	83.9	49.7	0.002358	1122	802.1	228.2	2131	2144	-2.5	0	19.9	-72.6	66.3	2.7	0.1320
135	14.6	32.5	63.2	2123	8.3	83.9	49.7	0.002359	1122	792.2	225.4	2131	2145	-5.0	0	19.9	-75.1	66.3	2.7	0.1320
139	14.7	32.6	63.1	2123	8.3	84.1	49.8	0.002359	1122	791.6	225.2	2131	2179	0.0	0	19.9	-70.1	66.3	2.7	0.1320
140	14.8	32.7	63.0	2123	8.3	83.7	49.6	0.002359	1122	793.4	225.7	2131	2179	0.0	0	22.9	-67.1	66.3	2.7	0.1320
141	14.9	32.8	63.0	2123	8.3	83.8	49.7	0.002360	1122	791.0	225.0	2131	2146	0.0	0	25.9	-64.1	66.3	2.7	0.1320
142	14.10	32.9	62.9	2123	8.3	83.8	49.6	0.002360	1122	793.9	225.9	2131	2179	0.0	0	16.8	-73.2	66.3	2.7	0.1320
143	14.11	32.10	62.8	2123	8.3	83.6	49.6	0.002360	1122	793.4	225.7	2131	2179	0.0	0	13.9	-76.1	66.3	2.7	0.1320
136	14.12	32.11	62.8	2123	8.3	83.7	49.6	0.002360	1122	792.2	225.4	2131	2179	0.0	0	19.9	-70.1	66.3	2.7	0.1320
137	14.13	32.12	62.7	2120	10.6	94.7	56.1	0.002358	1122	793.4	225.7	2131	2177	0.0	0	19.9	-70.1	66.3	2.7	0.1320
138	14.14	32.13	62.5	2125	6.4	73.4	43.5	0.002364	1121	792.8	225.5	2131	2181	0.0	0	19.9	-70.1	66.3	2.7	0.1320
		33.1																		
		33.2																		
		33.3																		
	15.1	34.1																		
	15.2	34.2																		
	15.3	34.3	50.7	2122	0.0	0.0	0.0	0.002418	1108	801.6	344.1	2122	2119	0.0	0	3.9	-86.1	100.0	4.1	0.0856

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
	15.4	34.4	50.8	2122	0.0	0.0	0.0	0.002418	1108	791.6	339.9	2122	2118	0.0	0	3.9	-86.1	100.0	4.1	0.0856
	15.5	34.5	50.8	2122	0.0	0.0	0.0	0.002418	1108	792.2	340.1	2122	2118	0.0	0	3.9	-86.1	100.0	4.1	0.0856
	15.6	34.6	50.8	2122	0.0	0.0	0.0	0.002418	1108	791.6	339.9	2122	2119	0.0	0	3.9	-86.1	100.0	4.1	0.0856
	15.7	34.7	50.8	2122	0.0	0.0	0.0	0.002418	1108	791.6	339.9	2122	2119	0.0	0	3.9	-86.1	100.0	4.1	0.0856
	15.8	34.8	50.7	2122	0.0	0.0	0.0	0.002418	1108	795.1	341.4	2122	2120	0.0	0	3.9	-86.1	100.0	4.1	0.0856
	15.9	34.9	50.7	2122	0.0	0.0	0.0	0.002419	1108	791.0	339.6	2122	2120	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.10	34.10	50.6	2122	0.0	0.0	0.0	0.002419	1108	790.4	339.4	2122	2121	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.11	34.11	50.5	2122	0.0	0.0	0.0	0.002419	1108	791.6	339.9	2122	2122	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.12	34.12	50.4	2122	0.0	0.0	0.0	0.002420	1108	793.4	340.6	2122	2122	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.13	34.13	50.4	2122	0.0	0.0	0.0	0.002420	1108	793.9	340.9	2122	2123	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.14	34.14	50.4	2122	0.0	0.0	0.0	0.002420	1108	790.4	339.4	2122	2124	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.15	34.15	50.4	2122	0.0	0.0	0.0	0.002420	1108	791.0	339.6	2122	2125	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.16	34.16	50.4	2122	0.0	0.0	0.0	0.002420	1108	791.6	339.9	2122	2125	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.17	34.17	50.4	2122	0.0	0.0	0.0	0.002420	1108	791.6	339.9	2122	2126	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.18	34.18	50.4	2122	0.0	0.0	0.0	0.002420	1108	791.0	339.6	2122	2126	0.0	0	4.1	-85.9	100.0	4.1	0.0856
	15.19	34.19	50.3	2122	0.0	0.0	0.0	0.002420	1108	793.4	340.6	2122	2127	0.0	0	4.1	-85.9	100.0	4.1	0.0856
	15.20	34.20	50.3	2123	0.0	0.0	0.0	0.002420	1108	792.2	340.1	2123	2127	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.21	34.21	50.2	2123	0.0	0.0	0.0	0.002421	1108	791.6	339.9	2123	2126	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.23	35.1	50.2	2123	0.0	0.0	0.0	0.002421	1108	791.6	339.9	2123	2125	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.24	35.2	50.2	2123	0.0	0.0	0.0	0.002421	1108	793.4	340.6	2123	2126	0.0	0	4.0	-86.0	100.0	4.1	0.0856
	15.25	35.3	52.0	2121	0.0	0.0	0.0	0.002411	1110	793.4	283.7	2121	2128	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.26	35.4	51.9	2121	0.0	0.0	0.0	0.002412	1110	792.2	283.3	2121	2131	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.27	35.5	51.9	2121	0.0	0.0	0.0	0.002412	1110	791.0	282.9	2121	2165	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.28	35.6	51.8	2121	0.0	0.0	0.0	0.002412	1110	792.8	283.5	2121	2164	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.29	35.7	51.8	2121	0.0	0.0	0.0	0.002412	1110	792.2	283.3	2121	2165	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.30	35.8	51.7	2121	0.0	0.0	0.0	0.002413	1109	792.8	283.5	2121	2165	0.0	0	4.1	-85.9	83.3	3.4	0.1050
	15.31	35.9	51.6	2121	0.0	0.0	0.0	0.002413	1109	793.4	283.7	2121	2166	0.0	0	3.8	-86.2	83.3	3.4	0.1050
	15.32	35.10	51.6	2121	0.0	0.0	0.0	0.002413	1109	792.8	283.5	2121	2166	0.0	0	3.8	-86.2	83.3	3.4	0.1050
	15.33	35.11	51.5	2122	0.0	0.0	0.0	0.002414	1109	792.8	283.5	2122	2166	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.34	35.12	51.4	2122	0.0	0.0	0.0	0.002415	1109	793.4	283.7	2122	2167	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.35	35.13	51.3	2122	0.0	0.0	0.0	0.002416	1109	793.9	284.0	2122	2168	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.36	35.14	51.0	2121	0.0	0.0	0.0	0.002416	1109	792.2	283.3	2121	2168	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.37	35.15	50.9	2121	0.0	0.0	0.0	0.002416	1109	791.0	282.9	2121	2169	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.38	35.16	50.8	2121	0.0	0.0	0.0	0.002416	1108	792.2	283.3	2121	2170	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.39	35.17	50.7	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2170	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.40	35.18	50.7	2121	0.0	0.0	0.0	0.002417	1108	792.8	283.5	2121	2171	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.41	35.19	50.7	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2172	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.42	35.20	50.7	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2173	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.43	35.21	50.6	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2173	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.44	35.22	50.6	2121	0.0	0.0	0.0	0.002417	1108	792.8	283.5	2121	2174	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.45	35.23	50.6	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2174	0.0	0	4.0	-86.0	83.3	3.4	0.1050

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
	15.46	35.24	50.6	2121	0.0	0.0	0.0	0.002417	1108	793.4	283.7	2121	2175	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.47	35.25	50.6	2121	0.0	0.0	0.0	0.002417	1108	793.4	283.7	2121	2175	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.48	35.26	50.6	2121	0.0	0.0	0.0	0.002417	1108	791.0	282.9	2121	2176	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.49	35.27	50.5	2121	0.0	0.0	0.0	0.002417	1108	791.0	282.9	2121	2176	0.0	0	4.0	-86.0	83.3	3.4	0.1050
		35.28																		
	15.50	35.29	50.5	2121	0.0	0.0	0.0	0.002417	1108	792.8	283.5	2121	2176	0.0	0	4.1	-85.9	83.3	3.4	0.1050
	15.51	35.30	50.5	2121	0.0	0.0	0.0	0.002417	1108	791.6	283.1	2121	2177	0.0	0	3.9	-86.1	83.3	3.4	0.1050
	15.54	36.1	50.5	2121	0.0	0.0	0.0	0.002417	1108	792.8	283.5	2121	2178	0.0	0	3.9	-86.1	83.3	3.4	0.1050
		36.2																		
	15.55	37.1	50.5	2121	0.0	0.0	0.0	0.002417	1108	793.9	284.0	2121	2178	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.57	38.1	41.0	2122	0.0	0.0	0.0	0.002465	1098	789.8	282.5	2122	2128	0.0	0	4.0	-86.0	83.3	3.4	0.1050
	15.58	38.2	41.1	2122	0.0	0.0	0.0	0.002460	1099	790.4	339.4	2122	2125	0.0	0	4.3	-85.7	100.0	4.1	0.0856
	15.59	38.3	43.4	2148	0.0	0.0	0.0	0.002484	1100	792.2	340.1	2148	2148	0.0	60	90.3	0.3	100.0	4.1	0.0856
	15.60	38.4	43.3	2148	0.0	0.0	0.0	0.002484	1100	793.9	340.9	2148	2148	0.0	60	90.3	0.3	100.0	4.1	0.0856
	15.61	38.5	43.6	2148	0.0	0.0	0.0	0.002483	1100	792.8	340.4	2148	2148	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.62	38.6	43.5	2148	0.0	0.0	0.0	0.002483	1100	792.2	340.1	2148	2149	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.63	38.7	43.4	2148	0.0	0.0	0.0	0.002484	1100	792.8	340.4	2148	2148	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.64	38.8	43.2	2148	0.0	0.0	0.0	0.002485	1100	791.6	339.9	2148	2148	0.0	60	90.3	0.3	100.0	4.1	0.0856
	15.65	38.9	43.2	2148	0.0	0.0	0.0	0.002485	1100	791.0	339.6	2148	2150	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.66	38.10	43.3	2148	0.0	0.0	0.0	0.002485	1100	792.8	340.4	2148	2150	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.67	38.11	43.4	2148	0.0	0.0	0.0	0.002484	1100	791.0	339.6	2148	2150	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.68	38.12	43.3	2148	0.0	0.0	0.0	0.002485	1100	791.6	339.9	2148	2151	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.69	38.13	43.2	2148	0.0	0.0	0.0	0.002485	1100	792.2	340.1	2148	2151	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.70	38.14	43.3	2148	0.0	0.0	0.0	0.002485	1100	790.4	339.4	2148	2151	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.71	38.15	43.2	2148	0.0	0.0	0.0	0.002486	1100	792.2	340.1	2148	2151	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.72	38.16	43.2	2149	0.0	0.0	0.0	0.002486	1100	792.8	340.4	2149	2152	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.73	38.17	43.1	2149	0.0	0.0	0.0	0.002486	1100	792.8	340.4	2149	2151	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.74	38.18	43.1	2149	0.0	0.0	0.0	0.002487	1100	791.0	339.6	2149	2152	0.0	60	90.3	0.3	100.0	4.1	0.0856
	15.75	38.19	43.1	2149	0.0	0.0	0.0	0.002487	1100	792.2	340.1	2149	2153	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.76	38.20	43.1	2149	0.0	0.0	0.0	0.002487	1100	792.8	340.4	2149	2153	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.77	38.21	43.1	2149	0.0	0.0	0.0	0.002487	1100	793.4	340.6	2149	2153	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.78	38.22	43.1	2149	0.0	0.0	0.0	0.002487	1100	792.2	340.1	2149	2153	0.0	60	90.0	0.0	100.0	4.1	0.0856
	15.80	39.1	43.1	2149	0.0	0.0	0.0	0.002487	1100	792.8	340.4	2149	2154	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.81	39.2	42.9	2149	0.0	0.0	0.0	0.002487	1100	793.4	340.6	2149	2155	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.82	39.3	43.9	2148	0.0	0.0	0.0	0.002482	1101	792.8	340.4	2148	2150	0.0	60	90.0	0.0	100.0	4.1	0.0856
	15.83	39.4	43.6	2149	0.0	0.0	0.0	0.002484	1100	792.2	340.1	2149	2151	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.84	39.5	43.4	2149	0.0	0.0	0.0	0.002485	1100	791.0	339.6	2149	2151	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.85	39.6	43.4	2149	0.0	0.0	0.0	0.002485	1100	792.8	340.4	2149	2152	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.86	39.7	43.6	2149	0.0	0.0	0.0	0.002485	1100	793.9	340.9	2149	2152	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.87	39.8	43.2	2149	0.0	0.0	0.0	0.002486	1100	793.4	340.6	2149	2153	0.0	60	90.3	0.3	100.0	4.1	0.0856
	15.88	39.9	43.1	2149	0.0	0.0	0.0	0.002487	1100	792.2	340.1	2149	2184	0.0	60	90.1	0.1	100.0	4.1	0.0856

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec.	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
	15.89	39.10	43.0	2149	0.0	0.0	0.0	0.002487	1100	791.0	339.6	2149	2184	0.0	60	90.2	0.2	100.0	4.1	0.0856
	15.91	40.1	42.9	2149	0.0	0.0	0.0	0.002488	1100	791.6	339.9	2149	2185	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.92	40.2	42.8	2149	0.0	0.0	0.0	0.002488	1100	792.2	340.1	2149	2186	0.0	60	90.1	0.1	100.0	4.1	0.0856
	16.1	41.1	42.2	2149	0.0	0.0	0.0	0.002486	1100	808.6	347.2	2149	2150	0.0	60	90.5	0.5	100.0	4.1	0.0856
	16.2	42.1	42.3	2150	0.0	0.0	0.0	0.002486	1100	800.4	343.6	2150	2151	0.0	60	90.5	0.5	100.0	4.1	0.0856
	16.3	42.2	42.7	2150	0.0	0.0	0.0	0.002484	1100	792.8	340.4	2150	2151	0.0	60	90.1	0.1	100.0	4.1	0.0856
	16.4	42.3	44.1	2147	0.0	0.0	0.0	0.002474	1102	794.5	341.1	2147	2185	0.0	60	90.1	0.1	100.0	4.1	0.0856
	16.5	42.4	43.6	2147	0.0	0.0	0.0	0.002476	1101	792.2	323.1	2147	2188	0.0	60	90.2	0.2	95.0	3.9	0.0908
	16.6	42.5	43.0	2147	0.0	0.0	0.0	0.002479	1101	791.0	305.7	2147	2192	0.0	60	90.3	0.3	90.0	3.7	0.0965
	16.7	42.6	42.9	2147	0.0	0.0	0.0	0.002480	1101	792.2	283.3	2147	2192	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.8	42.7	42.8	2147	0.0	0.0	0.0	0.002480	1101	793.4	283.7	2147	2192	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.9	42.8	42.8	2147	0.0	0.0	0.0	0.002480	1101	792.8	283.5	2147	2193	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.10	42.9	42.6	2147	0.0	0.0	0.0	0.002481	1100	792.8	283.5	2147	2194	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.11	42.10	42.6	2147	0.0	0.0	0.0	0.002481	1100	792.2	283.3	2147	2196	0.0	60	90.1	0.1	83.3	3.4	0.1050
	16.12	42.11	42.6	2147	0.0	0.0	0.0	0.002482	1100	793.9	284.0	2147	2197	0.0	60	90.2	0.2	83.3	3.4	0.1050
	16.13	42.12	42.6	2147	0.0	0.0	0.0	0.002481	1100	792.2	283.3	2147	2198	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.14	42.13	42.5	2147	0.0	0.0	0.0	0.002481	1100	791.0	282.9	2147	2199	0.0	60	90.3	0.3	83.3	3.4	0.1050
	16.15	42.14	42.4	2147	0.0	0.0	0.0	0.002482	1100	793.9	272.7	2147	2201	0.0	60	90.0	0.0	80.0	3.3	0.1096
	16.16	42.15	42.2	2147	0.0	0.0	0.0	0.002483	1100	792.8	255.3	2147	2202	0.0	60	90.1	0.1	75.0	3.1	0.1171
	16.17	42.16	42.1	2147	0.0	0.0	0.0	0.002483	1100	793.4	238.4	2147	2204	0.0	60	90.1	0.1	70.0	2.9	0.1253
	16.18	42.17	42.2	2146	0.0	0.0	0.0	0.002483	1100	792.2	227.9	2146	2205	0.0	60	90.1	0.1	67.0	2.8	0.1307
	16.19	42.18	42.1	2146	0.0	0.0	0.0	0.002483	1100	789.8	227.2	2146	2206	0.0	60	90.1	0.1	67.0	2.8	0.1307
	16.20	42.19	42.1	2146	0.0	0.0	0.0	0.002483	1100	792.8	228.1	2146	2206	0.0	60	90.1	0.1	67.0	2.8	0.1307
	16.21	42.20	42.0	2146	0.0	0.0	0.0	0.002483	1100	793.4	228.2	2146	2207	0.0	60	90.2	0.2	67.0	2.8	0.1307
	16.22	42.21	42.0	2146	0.0	0.0	0.0	0.002483	1100	792.8	228.1	2146	2207	0.0	60	90.2	0.2	67.0	2.8	0.1307
	16.23	42.22	42.0	2146	0.0	0.0	0.0	0.002483	1100	792.2	227.9	2146	2208	0.0	60	90.2	0.2	67.0	2.8	0.1307
	16.24	42.23	42.0	2146	0.0	0.0	0.0	0.002484	1100	794.5	228.6	2146	2208	0.0	60	90.2	0.2	67.0	2.8	0.1307
	16.25	42.24	42.0	2146	0.0	0.0	0.0	0.002483	1100	792.8	228.1	2146	2209	0.0	60	90.3	0.3	67.0	2.8	0.1307
	16.26	42.25	42.0	2146	0.0	0.0	0.0	0.002483	1100	791.0	227.5	2146	2209	0.0	60	90.4	0.4	67.0	2.8	0.1307
			41.9	2146	0.0	0.0	0.0	0.002484	1100	792.2	227.9	2146	2209	0.0	60					
			41.0	2064	0.0	0.0	0.0	0.002170	1098	790.0	224.7	2115	2003	-5.0	0	0.0	-93.0	66.3	2.7	0.0856
			92.9	2150	67.8	246.9	146.3	0.002490	1156	809.0	347.2	2150	2209	5.0	60	90.5	0.5	100.0	4.1	0.1320
49	12.67		51.9	2130	0.0	0.0	0.0	0.002420	1110	0.0	0.0	2130	2148	0.0	45	48.2	-41.8	85.0	3.5	0.1028
64	12.91		49.6	2130	0.0	0.0	0.0	0.002431	1107	0.0	0.0	2130	2140	0.0	45	60.0	-30.0	85.0	3.5	0.1028
82	13.28		49.6	2130	0.0	0.0	0.0	0.002432	1107	0.0	0.0	2130	2134	0.0	45	90.2	0.2	100.0	4.1	0.0856
94	13.57		56.6	2139	0.0	0.0	0.0	0.002407	1115	0.0	0.0	2139	2138	0.0	0	0.0	-90.0	66.3	2.7	0.1320
94	13.58		56.5	2139	0.0	0.0	0.0	0.002407	1115	0.0	0.0	2139	2138	0.0	0	0.0	-90.0	66.3	2.7	0.1320
108	13.71		73.8	2138	0.0	0.0	0.0	0.002321	1135	0.0	0.0	2138	2140	0.0	0	0.0	-90.0	66.3	2.7	0.1320
	13.97		76.6	2133	0.0	0.0	0.0	0.002304	1138	0.0	0.0	2133	2121	0.0	0	0.1	-89.9	66.3	2.7	0.1320
138	14.17																			

Model Test Conditions

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Tunnel Static Temp. °F	Tunnel Static Pressure lb./sq. ft.	Tunnel Dynamic Pressure lb./sq. ft.	Tunnel Velocity ft./sec.	Tunnel Velocity knots	Air Density slug/cu. ft.	Speed of Sound ft./sec.	Rotor RPM 1/min.	Blade Tip Speed ft./sec	Total Pressure lb./sq. ft.	Nacelle Pressure lb./sq. ft.	Wing Angle of Attack deg.	Flap Angle deg.	Nacelle Tilt Angle deg.	Shaft Angle deg.	Rotor Diam. %	Blade Radius ft.	Rotor Solidity (sigma)
	15.79		61.8	2131	0.0	0.0	0.0	0.002374	1121	0.0	0.0	2131	2186	0.0	45	90.0	0.0	100.0	4.1	0.0856
	15.90		42.5	2149	0.0	0.0	0.0	0.002490	1099	0.0	0.0	2149	2124	0.0	60	90.1	0.1	100.0	4.1	0.0856
	15.93		42.7	2149	0.0	0.0	0.0	0.002489	1099	0.0	0.0	2149	2185	0.0	60	90.1	0.1	100.0	4.1	0.0856
			42.3	2150	0.0	0.0	0.0	0.002486	1100	0.0	0.0	2150	2150	0.0	60	90.5	0.5	100.0	4.1	0.0856

APPENDIX B

Control Position Data

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
		24.1										
		24.2										
2	12.2	25.1	11.53	-5.05	-2.03	12.51	-1.44	3.40	11.53	12.51	-0.1	0.0
	12.3	25.2	13.56	-6.38	-2.92	14.53	-1.89	4.91	13.56	14.53	0.0	0.0
	12.4		14.96	-7.50	-4.09	15.98	-1.89	6.10	14.96	15.98	0.0	0.0
8	12.5	25.3	13.01	-6.26	-2.73	14.06	-1.69	4.41	13.01	14.06	0.0	0.0
9	12.6	25.4	14.01	-6.29	-2.73	15.05	-1.85	5.07	14.01	15.05	0.5	0.2
10	12.7	25.5	14.96	-6.31	-2.71	15.99	-1.95	5.75	14.96	15.99	1.1	0.2
11	12.8	25.6	11.95	-6.30	-2.73	13.09	-1.53	3.65	11.95	13.09	-0.5	-0.2
12	12.9	25.7	10.98	-6.34	-2.69	12.06	-1.36	3.03	10.98	12.06	-1.2	-0.4
18	12.10	28.8	12.96	-6.10	-2.74	14.00	-1.72	4.39	12.96	14.00	0.0	0.0
19	12.11	25.9	12.96	-5.09	-1.99	14.00	-1.65	4.14	12.96	14.00	0.7	0.3
20	12.12	25.10	12.91	-4.08	-1.21	13.92	-1.57	4.01	12.91	13.92	1.6	0.5
21	12.13	25.11	12.96	-7.12	-3.43	14.01	-1.77	4.47	12.96	14.01	-0.8	-0.2
22	12.14	25.12	12.95	-8.10	-4.09	14.10	-1.77	4.50	12.95	14.10	-1.6	-0.5
26	12.15	25.13	12.97	-6.08	-2.73	14.02	-1.71	4.47	12.97	14.02	0.0	0.0
27	12.16	25.14	12.93	-6.67	-1.73	13.97	-1.94	4.35	12.93	13.97	0.3	-0.6
28	12.17	25.15	12.93	-5.54	-3.71	13.98	-1.47	4.46	12.93	13.98	-0.2	0.6
1	12.18	25.16	4.00	-3.53	-0.83	4.94	-1.02	1.40	4.00	4.94	0.0	0.0
	12.19	25.17	6.02	-4.82	-1.51	7.07	-1.46	2.71	6.02	7.07	-0.1	0.0
	12.20	25.18	7.96	-6.08	-2.31	9.07	-1.92	4.21	7.96	9.07	0.0	0.1
	12.21	25.19	7.97	-6.21	-2.37	9.07	-1.90	4.23	7.97	9.07	0.0	0.0
	12.22	25.20	9.96	-7.80	-3.42	11.13	-2.31	5.85	9.96	11.13	0.0	0.0
	12.23	25.21	11.81	-9.12	-4.58	13.13	-3.06	7.63	11.81	13.13	0.2	-0.2
3	12.24	25.22	8.95	-6.88	-3.75	10.36	-2.67	5.31	8.95	10.36	0.0	0.0
4	12.25	25.23	9.96	-6.85	-3.77	11.40	-2.81	5.98	9.96	11.40	0.6	0.3
5	12.26	25.24	10.98	-6.80	-3.81	12.45	-3.02	6.72	10.98	12.45	1.4	0.6
6	12.27	25.25	7.95	-6.92	-3.74	9.45	-2.53	4.48	7.95	9.45	-0.6	-0.3
7	12.28	25.26	6.99	-6.90	-3.75	8.45	-2.40	3.83	6.99	8.45	-1.2	-0.5

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
13	12.29	25.27	8.99	-6.89	-3.66	10.39	-2.70	5.29	8.99	10.39	0.0	0.0
14	12.30	25.28	8.96	-5.92	-2.96	10.36	-2.73	5.17	8.96	10.36	0.8	0.3
15	12.31		8.94	-4.91	-2.28	10.40	-2.86	5.07	8.94	10.40	1.8	0.6
16	12.32	25.29	9.01	-7.89	-4.41	10.51	-2.80	5.32	9.01	10.51	-0.8	-0.4
17	12.33	25.30	9.04	-8.92	-5.21	10.49	-2.74	5.32	9.04	10.49	-1.8	-0.6
23	12.34	25.31	8.99	-6.92	-3.70	10.40	-2.71	5.29	8.99	10.40	0.0	0.0
24	12.35	25.32	8.97	-7.49	-2.71	10.40	-2.92	5.24	8.97	10.40	0.3	-0.6
25	12.36	25.33	9.00	-6.33	-4.71	10.42	-2.49	5.44	9.00	10.42	-0.3	0.7
30	12.37	25.34	12.97	-5.32	-2.72	14.11	-1.82	4.12	12.97	14.11	0.0	0.0
	12.38	25.35	13.98	-5.98	-3.22	15.11	-2.01	4.85	13.98	15.11	0.0	0.0
	12.39	25.36	14.96	-6.80	-3.79	16.05	-2.17	5.73	14.96	16.05	0.0	0.0
	12.40	25.37	15.40	-7.15	-4.14	16.51	-2.17	6.13	15.40	16.51	0.1	0.1
35	12.42	26.1	3.03	-4.59	-1.53	3.95	-2.06	2.98	7.29	8.21	0.0	0.0
	12.43	26.2	4.99	-5.82	-2.20	5.94	-2.57	4.24	9.25	10.20	0.0	0.0
	12.44	26.3	6.99	-7.06	-2.99	7.95	-3.11	5.54	11.25	12.21	0.0	0.0
	12.45	26.4	9.01	-8.50	-3.88	10.04	-3.68	6.92	13.27	14.30	0.0	0.0
	12.46	26.5	11.11	-10.00	-4.95	12.14	-4.19	8.43	15.37	16.40	0.0	0.0
		26.6										
36	12.47	26.7	7.37	-5.26	-2.28	8.39	-1.77	4.21	11.63	12.65	0.0	0.0
	12.48	26.8	9.47	-6.51	-3.21	10.48	-2.22	5.59	13.73	14.74	0.0	0.0
	12.49	26.9										
	12.50	26.10	11.45	-7.85	-4.04	12.45	-2.63	6.90	15.71	16.71	0.0	0.0
	12.51	26.11	13.47	-9.09	-5.04	14.45	-2.96	8.26	17.73	18.71	0.0	0.0
	12.52	26.12	14.99	-9.98	-5.75	15.96	-3.17	9.29	19.25	20.22	0.1	0.1
37	12.53	26.13	12.49	-8.79	-4.62	13.52	-2.72	7.58	16.75	17.78	0.0	0.0
38	12.54	26.14	13.49	-8.79	-4.63	14.52	-2.85	8.14	17.75	18.78	0.5	0.1
39	12.55	26.15	14.50	-8.74	-4.65	15.53	-2.99	8.78	18.76	19.79	1.1	0.3
40	12.56	26.16	11.48	-8.78	-4.64	12.51	-2.61	6.94	15.74	16.77	-0.6	-0.1
41	12.57	26.17	10.47	-8.77	-4.64	11.51	-2.50	6.22	14.73	15.77	-1.2	-0.2

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
42	12.58	26.18										
	12.59	26.19										
	12.60	26.20	12.48	-8.76	-4.60	13.51	-2.72	7.60	16.74	17.77	0.0	0.0
43	12.61	26.21	12.50	-7.74	-3.92	13.51	-2.63	7.46	16.76	17.77	0.9	0.3
44	12.62	26.22	12.51	-6.75	-3.23	13.55	-2.53	7.45	16.77	17.81	1.8	0.4
45	12.63	26.23	12.52	-9.81	-5.32	13.54	-2.81	7.66	16.78	17.80	-0.9	-0.2
47	12.64	26.24	12.51	-8.76	-4.60	13.55	-2.73	7.56	16.77	17.81	0.0	0.0
48	12.65	26.25	12.51	-9.33	-3.62	13.51	-2.91	7.42	16.77	17.77	0.2	-0.6
49	12.66	26.26	12.50	-8.17	-5.61	13.45	-2.53	7.65	16.76	17.71	-0.3	0.6
51	12.68	27.1	2.43	-3.11	-0.84	3.20	-1.45	1.93	6.69	7.46	-0.1	0.0
	12.69	27.2	4.42	-4.10	-1.20	5.31	-1.83	2.76	8.68	9.57	-0.1	0.0
	12.70	27.3	6.50	-4.99	-1.57	7.45	-2.23	3.60	10.76	11.71	0.0	0.0
	12.71	27.4	8.43	-5.89	-2.03	9.42	-2.60	4.41	12.69	13.68	0.0	0.0
	12.72	27.5	10.52	-6.92	-2.53	11.54	-2.98	5.35	14.78	15.80	0.0	0.0
	12.73	27.6	12.46	-7.96	-3.08	13.53	-3.25	6.22	16.72	17.79	0.0	0.1
	12.74	27.7	14.47	-9.33	-3.62	15.58	-3.72	7.25	18.73	19.84	0.0	0.0
	12.75	27.8	15.79	-10.04	-4.08	16.91	-4.00	7.95	20.05	21.17	0.0	0.0
50	12.76	27.9	5.99	-8.00	-1.62	7.21	-4.16	5.26	10.25	11.47	0.0	0.0
	12.77	27.10	7.99	-9.14	-1.99	9.20	-4.70	6.23	12.25	13.46	0.0	0.0
	12.78	27.11	9.47	-10.05	-2.35	10.68	-5.11	7.05	13.73	14.94	0.0	0.0
52	12.79	27.12	7.47	-8.82	-1.90	8.69	-4.58	5.94	11.73	12.95	0.0	0.0
53	12.80	27.13	8.44	-8.82	-1.89	9.64	-4.75	6.27	12.70	13.90	0.2	0.2
54	12.81	27.14	9.47	-8.83	-1.89	10.72	-5.00	6.85	13.73	14.98	0.7	0.5
		27.15										
55	12.82	27.16	6.46	-8.83	-1.94	7.69	-4.39	5.51	10.72	11.95	-0.4	-0.2
57	12.83	27.17	7.49	-8.82	-1.92	8.69	-4.57	5.99	11.75	12.95	0.0	0.0
58	12.84	27.18	7.50	-7.82	-1.23	8.69	-4.51	5.64	11.76	12.95	0.6	0.3
		27.19										
59	12.85	27.20	7.50	-6.79	-0.53	8.75	-4.47	5.57	11.76	13.01	1.5	0.5

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
60	12.86	27.21	7.48	-9.82	-2.60	8.66	-4.62	6.18	11.74	12.92	-0.8	-0.2
62	12.87	27.22										
	12.88	27.23	7.50	-8.78	-1.88	8.69	-4.59	6.00	11.76	12.95	0.0	0.0
63	12.89	27.24	7.50	-9.36	-0.87	8.69	-4.84	5.75	11.76	12.95	0.2	-0.6
64	12.90	27.25	7.46	-8.24	-2.85	8.69	-4.32	6.13	11.72	12.95	-0.2	0.6
66	13.1	28.1	5.94	-2.57	-0.34	6.94	0.00	0.00	5.94	6.94	0.0	0.0
	13.3	28.2	8.02	-3.55	-0.68	9.11	-1.47	1.88	8.02	9.11	0.0	0.0
	13.4	28.3	10.02	-4.52	-1.28	11.15	-1.76	2.82	10.02	11.15	0.0	0.1
	13.5	28.4	11.94	-5.47	-2.00	13.13	-1.97	3.83	11.94	13.13	0.0	0.0
	13.6	28.5	12.48	-5.92	-2.31	13.71	-2.04	4.18	12.48	13.71	0.0	0.0
65	13.7	28.6	3.36	-3.76	-0.12	4.46	-1.91	1.07	3.36	4.46	-0.1	0.0
	13.8	28.7	4.99	-4.42	-0.29	6.16	-2.25	1.70	4.99	6.16	-0.1	0.0
	13.9	28.8	7.02	-5.44	-0.68	8.27	-2.67	2.64	7.02	8.27	0.0	0.0
	13.10	28.9	8.95	-6.46	-1.13	10.22	-3.12	3.67	8.95	10.22	0.0	0.0
	13.11	28.10	10.24	-7.07	-1.64	11.61	-3.60	4.49	10.24	11.61	0.0	0.0
67	13.12	28.11	7.43	-5.71	-1.46	8.93	-3.18	3.08	7.43	8.93	0.0	0.0
68	13.13	28.12	8.49	-5.77	-1.44	9.97	-3.33	3.51	8.49	9.97	0.2	0.2
69	13.14	28.13	9.45	-5.81	-1.44	10.96	-3.50	3.88	9.45	10.96	0.5	0.4
70	13.15	28.14	6.50	-5.72	-1.47	8.08	-3.05	2.69	6.50	8.08	-0.3	-0.1
71	13.16	28.15	5.44	-5.72	-1.49	6.94	-2.74	2.20	5.44	6.94	-0.8	-0.3
72	13.17	28.16	7.45	-5.60	-1.31	8.88	-3.09	3.01	7.45	8.88	0.0	0.1
73	13.18	28.17	7.45	-4.60	-0.73	8.86	-3.08	2.81	7.45	8.86	0.6	0.5
74	13.19	28.18	7.45	-3.62	-0.16	8.92	-3.07	2.63	7.45	8.92	1.4	0.8
75	13.20	28.19	7.43	-6.60	-1.85	8.91	-3.16	3.12	7.43	8.91	-0.7	-0.3
76	13.21	28.20	7.43	-7.61	-2.40	8.98	-3.19	3.20	7.43	8.98	-1.4	-0.6
77	13.22	28.21	7.44	-5.68	-1.36	8.95	-3.10	3.05	7.44	8.95	0.0	0.0
78	13.23	28.22	7.45	-6.18	-0.32	8.97	-3.35	2.94	7.45	8.97	0.2	-0.5
79	13.24	28.23	7.43	-5.24	-2.32	8.96	-2.95	3.11	7.43	8.96	-0.4	0.6
80	13.25	28.24	6.43	-5.70	1.11	7.90	-4.56	1.08	6.43	7.90	0.0	0.0

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
81	13.26	28.25	7.45	-5.92	1.24	8.89	-4.77	1.31	7.45	8.89	0.0	0.1
82	13.27	28.26	7.41	-1.65	0.11	8.79	-0.64	0.13	7.41	8.79	0.0	-0.1
80A	13.29	29.1	15.97	-7.30	-4.21	16.90	-2.76	6.26	25.55	26.48	0.0	0.0
	13.30	29.2	16.96	-7.76	-4.55	17.84	-3.01	6.68	26.55	27.42	0.0	0.0
	13.31	29.3	17.95	-8.27	-4.88	18.78	-3.28	7.11	27.54	28.37	0.0	0.0
	13.32	29.4	18.95	-8.60	-5.26	19.76	-3.44	7.62	28.53	29.34	0.0	0.0
	13.33	29.5	19.91	-9.03	-5.55	20.71	-3.62	8.04	29.49	30.29	0.0	0.0
		29.6										
81A	13.34	29.7	17.00	-5.34	-2.91	17.81	-1.56	4.55	26.58	27.39	0.0	0.0
	13.35	29.8	17.94	-5.80	-3.21	18.75	-1.77	4.91	27.52	28.33	-0.1	0.0
	13.36	29.9	18.96	-5.96	-3.36	19.69	-1.88	5.16	28.54	29.27	0.0	0.0
	13.37	29.10	19.92	-6.27	-3.56	20.64	-2.03	5.48	29.50	30.23	0.0	0.0
	13.38	29.11	20.95	-6.57	-3.72	21.66	-2.16	5.78	30.54	31.24	0.0	0.0
	13.39	29.12	21.97	-6.97	-3.93	22.57	-2.35	6.12	31.55	32.15	0.0	0.0
	13.40	29.13	22.94	-7.20	-4.19	23.53	-2.43	6.44	32.52	33.12	0.0	0.0
	13.41	29.14	23.93	-7.47	-4.43	24.52	-2.55	6.77	33.51	34.11	0.0	0.0
	13.42	29.15	24.96	-8.02	-4.80	25.48	-2.81	7.26	34.54	35.06	-0.1	0.0
81B	13.43	29.16	36.93	-1.54	0.15	37.19	-0.73	0.24	46.52	46.77	0.0	0.1
	13.44	29.17	37.97	-1.74	0.15	38.17	-0.81	0.32	47.55	47.75	0.0	0.0
	13.45	29.18	39.92	-1.75	0.14	40.05	-0.86	0.38	49.51	49.63	0.0	0.0
	13.46	29.19	41.93	-1.98	-0.02	42.07	-0.97	0.56	51.51	51.65	0.0	0.0
	13.47	29.20	42.92	-1.96	-0.01	43.12	-0.95	0.58	52.51	52.71	0.0	0.0
	13.48	29.21	43.78	-2.10	-0.10	43.98	-1.04	0.71	53.36	53.56	0.0	0.0
87	13.49	29.22	38.94	-1.80	0.04	39.17	-0.84	0.44	48.53	48.75	0.0	0.0
88	13.50	29.23	38.94	-0.80	0.65	39.18	-0.48	0.33	48.53	48.76	0.7	0.1
89	13.51	29.24	38.94	0.21	1.24	39.19	-0.18	0.56	48.53	48.77	1.8	0.2
90	13.52	29.25	38.94	-2.81	-0.53	39.16	-1.14	0.32	48.52	48.75	-0.9	-0.1
91	13.53	29.26	38.94	-3.81	-1.14	39.28	-1.47	0.06	48.52	48.86	-2.1	-0.2
92	13.54	29.27	38.95	-1.92	-0.01	39.15	-0.88	0.48	48.53	48.73	0.0	0.0

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
93	13.55	29.28	38.95	-2.42	1.00	39.18	-0.81	0.08	48.53	48.76	0.0	-0.8
94	13.56	29.29	38.95	-1.45	-1.01	39.21	-0.88	0.65	48.53	48.80	-0.4	0.7
		30.1										
95	13.59	30.2	49.45	-2.00	0.37	49.83	-1.11	0.49	59.04	59.41	0.1	0.0
	13.60	30.3	50.41	-2.03	0.36	50.88	-1.12	0.47	59.99	60.46	0.0	0.0
	13.61	30.4	49.95	-1.99	0.37	50.40	-1.11	0.42	59.53	59.98	0.0	0.0
101	13.62	30.5	49.41	-2.00	0.36	49.82	-1.09	0.45	58.99	59.40	0.0	0.0
95A	13.63	30.6	50.43	-2.02	0.35	50.89	-1.12	0.44	60.02	60.48	0.0	0.0
101A	13.64	30.7	49.45	-2.01	0.31	49.85	-1.09	0.40	59.03	59.43	-0.1	0.0
102	13.65	30.8	49.47	-1.01	0.89	49.86	-0.85	0.70	59.05	59.44	1.1	0.3
103	13.66	30.9	49.47	0.00	1.46	49.92	-0.86	1.51	59.05	59.50	2.7	0.7
104	13.67	30.10	49.41	-3.00	-0.27	49.88	-1.37	-0.08	58.99	59.46	-1.4	-0.1
106	13.68	30.11	49.44	-2.05	0.35	49.89	-1.12	0.48	59.02	59.47	0.0	0.0
107	13.69	30.12	49.46	-2.50	1.39	49.89	-0.62	0.11	59.05	59.48	0.2	-1.2
108	13.70	30.13	49.38	-1.63	-0.63	49.79	-1.51	0.60	58.97	59.37	-0.4	1.1
109	13.72	31.1	38.00	-1.97	0.02	38.14	-0.77	0.36	47.58	47.72	0.0	0.1
110	13.73	31.2	37.99	-1.97	0.01	38.15	-0.88	1.26	47.58	47.73	0.8	0.2
111	13.74	31.3	37.99	-1.97	0.01	38.17	-0.88	2.45	47.57	47.75	1.8	0.2
112	13.75	31.4	37.99	-1.97	0.01	38.17	-0.81	-0.66	47.57	47.75	-0.9	0.1
113	13.76	31.5	37.99	-1.96	0.01	38.23	-0.85	-1.70	47.57	47.81	-1.9	0.2
114	13.77	31.6	50.93	-1.98	0.59	51.50	-1.07	0.38	60.52	61.08	0.2	0.0
115	13.78	31.7	50.93	-1.97	0.59	51.49	-1.22	1.77	60.52	61.07	1.4	0.2
116	13.79	31.8	50.93	-1.98	0.59	51.49	-1.26	2.27	60.51	61.07	1.9	0.3
117	13.80	31.9	50.93	-1.98	0.59	51.45	-0.93	-0.37	60.51	61.04	-0.4	-0.1
118	13.81	31.10	50.93	-1.98	0.58	51.52	-0.85	-1.84	60.51	61.10	-1.8	-0.2
128	13.82	31.11	50.93	-1.98	0.58	51.52	-1.08	0.48	60.51	61.10	0.3	0.1
129	13.83	31.12	50.93	-1.98	0.58	51.51	-1.16	1.70	60.51	61.09	1.4	0.1
130	13.84	31.13	50.93	-1.98	0.58	51.50	-1.22	2.59	60.51	61.08	2.2	0.2
123	13.85		51.26	-1.98	0.58	51.82	-1.05	0.40	60.84	61.40	0.2	0.0

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
122	13.86	31.14	49.84	-2.02	0.57	50.33	-1.01	0.38	59.43	59.91	0.2	0.0
124	13.87	31.15	47.98	-2.27	0.06	48.36	-1.05	0.55	57.56	57.94	0.0	0.0
122A	13.88	31.16	47.96	-2.27	0.06	48.35	-1.04	0.41	57.54	57.93	-0.2	0.0
122B	13.89		49.82	-2.00	0.28	50.29	-0.99	0.47	59.40	59.87	0.1	0.1
124A	13.90	31.17	49.84	-2.00	0.28	50.33	-0.95	0.53	59.43	59.91	0.1	0.1
125	13.91	31.18	39.51	-2.09	-0.25	39.68	-0.74	0.60	49.09	49.26	0.0	0.0
126	13.92		39.51	-2.09	-0.25	39.69	-0.75	0.89	49.09	49.27	0.2	0.1
127	13.93	31.19	39.50	-2.10	-0.24	39.67	-0.79	1.60	49.09	49.26	0.9	0.2
119	13.94	31.20	36.44	-2.11	-0.25	36.76	-0.69	0.61	46.02	46.35	0.0	0.0
120	13.95	31.21	36.43	-2.11	-0.25	36.78	-0.72	0.47	46.01	46.36	-0.1	0.1
121	13.96	31.22	36.43	-2.11	-0.25	36.80	-0.67	0.62	46.01	46.38	0.0	0.0
131	14.1	32.1	20.52	-7.15	-3.90	21.24	-2.22	5.87	30.11	30.82	0.0	0.0
132	14.2		20.53	-7.15	-3.90	21.23	-2.19	5.97	30.12	30.82	0.1	0.0
133	14.3	32.2	20.53	-7.15	-3.90	21.24	-2.17	6.27	30.12	30.83	0.3	0.1
133A	14.4	32.3	20.52	-7.15	-3.90	21.28	-2.12	7.00	30.11	30.86	1.0	0.0
134	14.5	32.4	20.52	-7.15	-3.90	21.27	-2.20	5.23	30.10	30.86	-0.6	0.0
135	14.6	32.5	20.52	-7.15	-3.90	21.27	-2.27	4.51	30.10	30.85	-1.2	0.0
139	14.7	32.6	20.53	-7.15	-3.89	21.34	-2.17	5.82	30.11	30.92	-0.1	0.0
140	14.8	32.7	20.52	-7.15	-3.89	21.26	-2.30	6.18	30.10	30.84	0.3	0.0
141	14.9	32.8	20.51	-7.15	-3.89	21.33	-2.37	6.88	30.10	30.92	1.0	0.0
142	14.10	32.9	20.52	-7.14	-3.89	21.30	-2.13	5.23	30.10	30.88	-0.6	0.0
143	14.11	32.10	20.52	-7.14	-3.89	21.28	-2.16	4.61	30.10	30.86	-1.3	0.2
136	14.12	32.11	20.50	-7.15	-3.89	21.25	-2.18	5.84	30.09	30.84	0.0	0.0
137	14.13	32.12	20.51	-7.13	-3.89	21.29	-1.99	5.70	30.09	30.87	-0.1	-0.1
138	14.14	32.13	20.50	-7.13	-3.89	21.33	-2.26	5.85	30.08	30.91	0.0	0.0
		33.1										
		33.2										
		33.3										
	15.1	34.1										

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
	15.2	34.2										
	15.3	34.3	-0.80	-1.95	-0.67	0.07	0.13	0.74	-0.80	0.07	0.2	-0.4
	15.4	34.4	1.50	-1.54	-0.91	2.41	-0.11	0.67	1.50	2.41	0.0	0.2
	15.5	34.5	2.46	-1.53	-0.89	3.38	0.01	0.62	2.46	3.38	-0.1	0.0
	15.6	34.6	3.49	-1.58	-0.84	4.47	-0.04	0.61	3.49	4.47	-0.1	0.0
	15.7	34.7	4.47	-1.59	-0.78	5.52	-0.05	0.59	4.47	5.52	-0.1	0.0
	15.8	34.8	5.51	-1.33	-0.59	6.61	0.06	0.46	5.51	6.61	0.0	0.0
	15.9	34.9	6.53	-1.33	-0.56	7.67	0.05	0.49	6.53	7.67	0.1	0.1
	15.10	34.10	7.46	-1.43	-0.65	8.63	0.04	0.57	7.46	8.63	0.0	0.0
	15.11	34.11	8.45	-1.43	-0.64	9.64	0.03	0.58	8.45	9.64	0.0	0.0
	15.12	34.12	9.49	-1.76	-0.79	10.70	-0.09	0.76	9.49	10.70	0.0	0.0
	15.13	34.13	10.50	-1.95	-0.92	11.73	-0.14	0.88	10.50	11.73	0.0	-0.1
	15.14	34.14	11.46	-1.84	-1.12	12.70	-0.01	0.97	11.46	12.70	0.0	0.0
	15.15	34.15	12.48	-1.53	-1.16	13.72	0.15	0.96	12.48	13.72	0.0	0.0
	15.16	34.16	13.45	-1.63	-1.26	14.71	0.13	1.07	13.45	14.71	0.0	0.0
	15.17	34.17	14.50	-1.76	-1.38	15.74	0.12	1.20	14.50	15.74	0.0	0.0
	15.18	34.18	15.41	-1.77	-1.56	16.62	0.17	1.31	15.41	16.62	0.0	0.0
	15.19	34.19	16.42	-1.70	-1.73	17.57	0.25	1.43	16.42	17.57	0.0	0.0
	15.20	34.20	0.99	-1.65	-0.92	2.19	-0.03	0.68	0.99	2.19	0.0	0.0
	15.21	34.21	0.52	-1.79	-0.92	1.72	-0.12	0.72	0.52	1.72	0.0	0.0
	15.23	35.1	-0.04	-1.88	-0.88	1.16	-0.21	0.82	-0.04	1.16	0.1	0.1
	15.24	35.2	-0.58	-2.18	-0.85	0.61	-0.38	0.85	-0.58	0.61	0.0	0.0
	15.25	35.3	-6.08	-1.93	-0.74	-5.69	-0.15	0.77	-1.34	-0.95	0.0	-0.1
	15.26	35.4	-5.04	-2.10	-1.00	-4.61	-0.37	1.05	-0.30	0.13	0.0	0.1
	15.27	35.5	-4.12	-1.84	-0.87	-3.69	-0.27	0.76	0.63	1.05	0.0	0.0
	15.28	35.6	-3.09	-1.97	-0.92	-2.61	-0.27	0.79	1.65	2.13	0.0	0.0
	15.29	35.7	-2.14	-1.96	-1.06	-1.51	-0.21	0.89	2.61	3.23	0.0	0.0
	15.30	35.8	-1.05	-1.59	-1.11	-0.33	0.03	0.83	3.70	4.41	0.0	0.1
	15.31	35.9	0.00	-1.67	-1.01	0.78	-0.05	0.78	4.75	5.52	0.0	0.0

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
	15.32	35.10	0.94	-1.36	-0.82	1.76	0.08	0.59	5.68	6.50	0.0	0.0
	15.33	35.11	1.93	-1.47	-0.88	2.78	0.02	0.65	6.68	7.52	0.0	0.0
	15.34	35.12	2.97	-1.48	-0.85	3.87	-0.03	0.64	7.71	8.61	0.0	0.0
	15.35	35.13	3.98	-1.53	-0.78	4.95	-0.05	0.64	8.73	9.69	0.0	0.0
	15.36	35.14	4.96	-1.54	-0.73	5.99	-0.05	0.64	9.70	10.73	0.0	0.0
	15.37	35.15	6.02	-1.52	-0.70	7.09	-0.03	0.63	10.76	11.84	0.0	0.0
	15.38	35.16	7.03	-1.77	-0.71	8.15	-0.16	0.69	11.78	12.89	0.0	0.0
	15.39	35.17	8.00	-1.74	-0.70	9.14	-0.14	0.69	12.74	13.88	0.0	0.0
	15.40	35.18	9.00	-1.75	-0.68	10.15	-0.14	0.69	13.74	14.89	0.0	0.0
	15.41	35.19	9.44	-1.76	-0.68	10.59	-0.15	0.70	14.18	15.33	0.0	0.0
	15.42	35.20	9.99	-1.77	-0.67	11.14	-0.15	0.69	14.73	15.88	0.0	0.0
	15.43	35.21	10.51	-1.78	-0.65	11.67	-0.15	0.69	15.26	16.41	0.0	0.0
	15.44	35.22	10.96	-1.77	-0.65	12.11	-0.16	0.69	15.71	16.86	0.0	0.0
	15.45	35.23	11.52	-1.77	-0.65	12.67	-0.15	0.70	16.27	17.42	0.0	0.0
	15.46	35.24	12.04	-1.38	-0.68	13.17	0.04	0.63	16.79	17.91	0.1	0.0
	15.47	35.25	12.50	-1.50	-0.75	13.63	0.00	0.71	17.25	18.37	0.0	0.0
	15.48	35.26	13.00	-1.48	-0.76	14.12	0.04	0.72	17.74	18.87	0.0	0.0
	15.49	35.27	13.49	-1.46	-0.77	14.63	0.04	0.74	18.24	19.37	0.0	0.0
		35.28										
	15.50	35.29	14.51	-1.43	-0.80	15.62	0.06	0.75	19.25	20.36	0.0	0.0
	15.51	35.30	15.47	-1.50	-0.86	16.57	0.03	0.83	20.21	21.32	0.0	0.0
	15.54	36.1	16.48	-1.89	-1.07	17.58	-0.14	1.04	21.22	22.33	-0.1	0.0
		36.2										
	15.55	37.1	17.46	-1.88	-1.04	18.56	-0.12	1.04	22.20	23.30	-0.1	0.0
	15.57	38.1	9.03	-1.83	-0.96	10.21	-0.08	0.88	13.77	14.96	0.0	0.0
	15.58	38.2	15.52	-1.72	-1.34	16.73	0.12	1.22	15.52	16.73	0.0	0.0
	15.59	38.3	-1.07	-2.12	-0.80	-0.20	0.10	0.89	-1.07	-0.20	0.2	-0.4
	15.60	38.4	-0.58	-2.13	-0.79	0.30	-0.18	0.80	-0.58	0.30	0.0	-0.1
	15.61	38.5	-0.15	-2.37	-1.15	0.74	-0.06	1.13	-0.15	0.74	0.0	-0.2

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
	15.62	38.6	0.43	-2.45	-0.96	1.31	-0.50	0.99	0.43	1.31	-0.1	0.0
	15.63	38.7	1.47	-2.16	-0.83	2.35	-0.27	0.77	1.47	2.35	-0.1	-0.2
	15.64	38.8	2.44	-1.79	-1.09	3.34	-0.13	0.88	2.44	3.34	0.0	0.0
	15.65	38.9	3.44	-1.60	-1.11	4.41	-0.01	0.84	3.44	4.41	-0.1	0.1
	15.66	38.10	4.46	-1.50	-0.99	5.49	0.05	0.74	4.46	5.49	-0.1	0.1
	15.67	38.11	5.46	-1.52	-0.83	6.53	0.04	0.70	5.46	6.53	0.0	0.0
	15.68	38.12	6.46	-1.50	-0.82	7.56	0.04	0.67	6.46	7.56	0.0	0.0
	15.69	38.13	7.49	-1.36	-0.79	8.63	0.09	0.55	7.49	8.63	0.0	0.0
	15.70	38.14	8.43	-1.53	-0.88	9.59	0.06	0.62	8.43	9.59	0.0	0.0
	15.71	38.15	9.47	-1.52	-0.93	10.63	0.08	0.68	9.47	10.63	0.0	0.0
	15.72	38.16	10.47	-1.48	-0.99	11.65	0.11	0.72	10.47	11.65	0.0	0.0
	15.73	38.17	11.42	-1.47	-1.00	12.59	0.13	0.74	11.42	12.59	0.0	0.0
	15.74	38.18	12.44	-1.48	-1.13	13.59	0.17	0.83	12.44	13.59	0.0	0.0
	15.75	38.19	13.43	-1.50	-1.20	14.59	0.22	0.93	13.43	14.59	0.0	0.0
	15.76	38.20	14.49	-1.46	-1.28	15.64	0.25	0.96	14.49	15.64	0.0	0.0
	15.77	38.21	15.44	-1.59	-1.40	16.55	0.24	1.09	15.44	16.55	0.0	0.0
	15.78	38.22	9.45	-1.43	-0.91	10.61	0.15	0.64	9.45	10.61	0.0	0.0
	15.80	39.1	-0.62	-1.94	-0.70	0.27	-0.36	0.84	-0.62	0.27	0.1	0.2
	15.81	39.2	8.42	-1.25	-0.84	9.51	0.14	0.59	8.42	9.51	-0.1	0.1
	15.82	39.3	-0.60	-2.30	-0.93	0.17	-0.21	1.13	-0.60	0.17	0.1	0.0
	15.83	39.4	1.95	-2.17	-0.69	2.78	-0.39	0.71	1.95	2.78	-0.1	-0.1
	15.84	39.5	3.96	-1.70	-0.96	4.88	-0.05	0.76	3.96	4.88	0.0	0.0
	15.85	39.6	5.91	-1.76	-0.92	6.96	0.02	0.72	5.91	6.96	0.0	-0.1
	15.86	39.7	8.43	-1.59	-1.06	9.52	0.12	0.69	8.43	9.52	-0.1	0.0
	15.87	39.8	9.98	-1.48	-0.96	11.08	0.10	0.70	9.98	11.08	0.0	0.0
	15.88	39.9	11.93	-1.55	-1.15	13.02	0.13	0.88	11.93	13.02	0.0	0.0
	15.89	39.10	13.94	-1.66	-1.43	15.02	0.20	1.09	13.94	15.02	-0.1	0.0
	15.91	40.1	15.90	-1.56	-1.64	17.02	0.33	1.22	15.90	17.02	0.0	0.0
	15.92	40.2	9.42	-1.17	-0.86	10.63	0.23	0.52	9.42	10.63	0.0	0.1

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
	16.1	41.1	13.96	-1.68	-1.29	15.06	0.15	1.11	13.96	15.06	0.0	0.0
	16.2	42.1	13.95	-1.61	-1.41	15.05	0.21	1.10	13.95	15.05	0.0	0.0
	16.3	42.2	4.44	-1.62	-0.78	5.35	0.03	0.69	4.44	5.35	0.0	0.0
	16.4	42.3	4.52	-1.68	-0.57	5.22	-0.07	0.67	4.52	5.22	0.0	-0.1
	16.5	42.4	3.09	-1.62	-0.76	3.82	0.08	0.62	4.51	5.24	0.0	0.0
	16.6	42.5	2.73	-1.60	-0.77	3.55	0.07	0.56	5.57	6.39	0.0	0.0
	16.7	42.6	2.64	-1.59	-0.78	3.48	0.06	0.56	7.39	8.22	0.0	0.0
	16.8	42.7	5.00	-1.53	-0.93	5.92	0.15	0.64	9.74	10.66	0.0	0.0
	16.9	42.8	6.96	-1.50	-0.89	7.86	0.13	0.66	11.71	12.60	0.0	0.0
	16.10	42.9	8.94	-1.46	-0.86	9.81	0.12	0.65	13.68	14.55	0.0	0.0
	16.11	42.10	11.03	-1.47	-0.84	11.90	0.13	0.66	15.77	16.64	0.0	0.0
	16.12	42.11	12.95	-1.44	-0.87	13.79	0.14	0.68	17.69	18.54	0.0	0.0
	16.13	42.12	14.99	-1.38	-0.90	15.79	0.16	0.72	19.74	20.53	0.0	0.0
	16.14	42.13	15.97	-1.38	-0.90	16.78	0.17	0.75	20.71	21.52	0.0	0.0
	16.15	42.14	2.79	-1.23	-1.03	3.59	0.29	0.58	8.47	9.27	0.0	0.0
	16.16	42.15	3.03	-1.33	-1.15	3.75	0.24	0.78	10.13	10.85	0.0	0.0
	16.17	42.16	3.87	-1.39	-1.09	4.69	0.21	0.81	12.39	13.21	0.0	0.0
	16.18	42.17	4.96	-1.39	-1.03	5.93	0.26	0.75	14.33	15.30	0.0	0.0
	16.19	42.18	6.96	-1.35	-0.99	7.89	0.24	0.75	16.33	17.26	0.0	0.0
	16.20	42.19	8.98	-1.32	-0.97	9.90	0.25	0.77	18.35	19.28	0.0	0.0
	16.21	42.20	10.96	-1.33	-0.94	11.91	0.25	0.76	20.34	21.28	0.0	0.0
	16.22	42.21	12.97	-1.45	-1.08	13.90	0.20	0.92	22.34	23.27	0.0	0.0
	16.23	42.22	14.99	-1.39	-1.11	15.88	0.23	0.97	24.37	25.26	0.0	0.0
	16.24	42.23	17.00	-1.41	-1.09	17.90	0.21	0.99	26.37	27.27	0.0	0.1
	16.25	42.24	19.02	-2.01	-1.23	19.81	-0.14	1.32	28.39	29.18	0.0	0.0
	16.26	42.25	20.99	-2.04	-1.26	21.65	-0.12	1.43	30.36	31.02	0.0	0.0
			23.01	-2.06	-1.27	23.70	-0.07	1.43	32.38	33.07	0.1	0.0
			-6.08	-10.05	-5.75	-5.69	-5.11	-1.84	-1.34	-0.95	-2.1	-1.2

Control Position Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Swashplate Collective Angle deg.	Swashplate A1s Angle deg.	Swashplate B1s Angle deg.	Blade Collective Angle deg.	Blade A1gimbal Angle deg.	Blade B1gimbal Angle deg.	Swashplate Collective, 75% Radius deg.	Blade Collective, 75% Radius deg.	Gimbal A1s Angle deg.	Gimbal B1s Angle deg.
			51.26	0.21	1.46	51.82	0.33	9.29	60.84	61.40	2.7	1.1
49	12.67											
64	12.91		-0.15	-0.05	-0.05	-0.71	0.00	0.00	4.11	3.55	0.0	0.0
82	13.28		-0.06	0.03	-0.05	-0.70	0.00	0.00	4.20	3.56	0.0	0.0
94	13.57		-0.11	0.00	0.02	-0.43	0.00	0.00	-0.11	-0.43	0.0	0.0
94	13.58		0.00	0.00	-0.01	-0.88	0.00	0.00	9.58	8.70	0.0	0.0
108	13.71		0.01	0.00	-0.01	-0.88	0.00	0.00	9.59	8.70	0.0	0.0
	13.97		0.01	-0.07	-0.10	-0.50	0.00	0.00	9.59	9.08	0.0	0.0
138	14.17		0.02	-0.01	-0.01	-0.91	0.00	0.00	9.60	8.67	0.0	0.0
	15.79		-0.02	-0.04	0.08	-0.86	0.00	0.00	-0.02	-0.86	0.0	0.0
	15.90		-0.03	-0.03	0.04	-0.85	0.00	0.00	-0.03	-0.85	0.0	0.0
	15.93		-0.04	0.05	-0.04	-0.41	0.00	0.00	-0.04	-0.41	0.0	0.0
			-0.14	0.01	0.01	-0.96	0.00	0.00	-0.14	-0.96	0.0	0.0

APPENDIX C

Rotor Thrust Parameters

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
		24.1														
		24.2														
2	12.2	25.1	6.6	14.1	0.00532	0.00277	0.0035	0.0058	0.507	0.0290	22.7	22.7	-16.1	6.6	0.00532	0.00277
	12.3	25.2	33.5	29.0	0.02709	0.00572	0.0180	0.0119	1.258	0.1613	50.1	50.1	-16.6	33.5	0.02709	0.00572
	12.4		51.8	41.0	0.04177	0.00807	0.0277	0.0168	1.372	0.2188	65.1	65.1	-13.3	51.8	0.04177	0.00807
8	12.5	25.3	24.8	25.0	0.01984	0.00488	0.0132	0.0102	1.082	0.1185	40.1	40.1	-15.4	24.8	0.01984	0.00488
9	12.6	25.4	40.7	34.2	0.03279	0.00672	0.0218	0.0140	1.298	0.1829	56.6	56.6	-15.9	40.7	0.03279	0.00672
10	12.7	25.5	58.0	44.3	0.04665	0.00870	0.0310	0.0181	1.427	0.2397	74.4	74.4	-16.4	58.0	0.04665	0.00870
11	12.8	25.6	7.8	16.1	0.00631	0.00316	0.0042	0.0066	0.529	0.0328	22.0	22.0	-14.1	7.8	0.00631	0.00316
12	12.9	25.7	-10.2	7.1	-0.00817	0.00140	-0.0054	0.0029	0.000	0.0000	3.2	3.3	-13.4	-10.2	-0.00817	0.00140
18	12.10	28.8	22.9	24.3	0.01846	0.00477	0.0123	0.0099	1.032	0.1088	39.0	39.0	-16.0	22.9	0.01846	0.00477
19	12.11	25.9	27.4	26.5	0.02201	0.00521	0.0146	0.0109	1.126	0.1298	44.6	44.5	-17.2	27.4	0.02201	0.00521
20	12.12	25.10	34.2	29.8	0.02760	0.00586	0.0183	0.0122	1.253	0.1620	51.8	51.7	-17.6	34.2	0.02760	0.00586
21	12.13	25.11	19.7	22.8	0.01590	0.00447	0.0106	0.0093	0.935	0.0928	34.6	34.6	-14.8	19.7	0.01590	0.00447
22	12.14	25.12	15.7	20.9	0.01259	0.00410	0.0084	0.0085	0.805	0.0714	30.1	30.1	-14.4	15.7	0.01259	0.00410
26	12.15	25.13	26.5	26.2	0.02125	0.00514	0.0141	0.0107	1.087	0.1248	42.5	42.5	-16.0	26.5	0.02125	0.00514
27	12.16	25.14	28.4	27.0	0.02278	0.00527	0.0151	0.0110	1.127	0.1349	43.3	43.4	-14.9	28.4	0.02278	0.00527
28	12.17	25.15	23.4	24.8	0.01871	0.00484	0.0124	0.0101	1.017	0.1094	40.0	39.9	-16.6	23.4	0.01871	0.00484
1	12.18	25.16	5.6	18.2	0.00453	0.00356	0.0030	0.0074	0.337	0.0177	9.2	9.2	-3.6	5.6	0.00453	0.00356
	12.19	25.17	33.6	22.6	0.02693	0.00443	0.0179	0.0092	1.603	0.2065	42.1	42.1	-8.5	33.6	0.02693	0.00443
	12.20	25.18	61.8	29.3	0.04961	0.00574	0.0329	0.0120	2.293	0.3984	71.9	71.9	-10.1	61.8	0.04961	0.00574
	12.21	25.19	61.1	29.1	0.04885	0.00568	0.0324	0.0118	2.282	0.3933	70.6	70.6	-9.5	61.1	0.04885	0.00568
	12.22	25.20	86.5	37.1	0.06932	0.00726	0.0460	0.0151	2.548	0.5205	94.9	94.9	-8.5	86.5	0.06932	0.00726
	12.23	25.21	109.7	46.1	0.08800	0.00901	0.0584	0.0188	2.599	0.5993	112.3	112.3	-2.6	109.7	0.08800	0.00901
3	12.24	25.22	77.1	33.6	0.06177	0.00657	0.0410	0.0137	2.467	0.4834	80.6	80.6	-3.5	77.1	0.06177	0.00657
4	12.25	25.23	93.0	37.8	0.07449	0.00739	0.0494	0.0154	2.644	0.5694	96.9	96.9	-3.9	93.0	0.07449	0.00739
5	12.26	25.24	110.8	42.3	0.08868	0.00827	0.0589	0.0172	2.820	0.6608	114.8	114.7	-4.0	110.8	0.08868	0.00827
6	12.27	25.25	60.1	29.7	0.04816	0.00580	0.0320	0.0121	2.167	0.3772	62.9	62.9	-2.8	60.1	0.04816	0.00580
7	12.28	25.26	44.7	26.1	0.03560	0.00506	0.0236	0.0106	1.812	0.2747	46.6	46.6	-1.9	44.7	0.03560	0.00506
13	12.29	25.27	77.9	33.8	0.06254	0.00661	0.0415	0.0138	2.454	0.4894	81.8	81.8	-3.9	77.9	0.06254	0.00661
14	12.30	25.28	84.1	33.9	0.06731	0.00661	0.0447	0.0138	2.626	0.5466	88.3	88.3	-4.2	84.1	0.06731	0.00661
15	12.31		90.3	33.9	0.07213	0.00661	0.0479	0.0138	2.813	0.6065	95.3	95.2	-5.0	90.3	0.07213	0.00661
16	12.32	25.29	73.4	33.9	0.05888	0.00663	0.0391	0.0138	2.290	0.4460	76.3	76.3	-2.9	73.4	0.05888	0.00663
17	12.33	25.30	68.1	33.7	0.05443	0.00656	0.0361	0.0137	2.135	0.4004	70.4	70.4	-2.2	68.1	0.05443	0.00656
23	12.34	25.31	77.4	33.7	0.06192	0.00658	0.0411	0.0137	2.440	0.4845	81.2	81.2	-3.8	77.4	0.06192	0.00658
24	12.35	25.32	79.0	33.8	0.06320	0.00660	0.0420	0.0138	2.507	0.4984	82.8	82.8	-3.8	79.0	0.06320	0.00660
25	12.36	25.33	77.7	34.1	0.06222	0.00666	0.0413	0.0139	2.453	0.4824	81.0	81.0	-3.3	77.7	0.06222	0.00666
30	12.37	25.34	1.7	11.1	0.00132	0.00216	0.0009	0.0045	0.184	0.0046	19.1	19.1	-17.5	1.7	0.00132	0.00216

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
	12.38	25.35	14.2	18.5	0.01142	0.00364	0.0076	0.0076	0.947	0.0693	32.3	32.3	-18.1	14.2	0.01142	0.00364
	12.39	25.36	27.0	26.9	0.02166	0.00525	0.0144	0.0109	1.247	0.1258	45.0	45.0	-17.9	27.0	0.02166	0.00525
	12.40	25.37	33.6	31.2	0.02695	0.00612	0.0179	0.0128	1.327	0.1496	50.1	50.0	-16.5	33.6	0.02695	0.00612
35	12.42	26.1	0.5	3.7	0.00066	0.00132	0.0005	0.0033	0.154	0.0029	-3.2	-3.2	3.7	0.5	0.00041	0.00070
	12.43	26.2	17.8	9.4	0.02223	0.00336	0.0177	0.0084	2.047	0.2234	18.9	18.9	-1.1	17.8	0.01392	0.00179
	12.44	26.3	33.9	15.9	0.04241	0.00569	0.0338	0.0142	2.315	0.3479	38.5	38.5	-4.6	33.9	0.02656	0.00303
	12.45	26.4	52.3	24.0	0.06545	0.00861	0.0521	0.0216	2.333	0.4406	59.5	59.5	-7.3	52.3	0.04099	0.00459
	12.46	26.5	67.2	32.0	0.08502	0.01161	0.0677	0.0291	2.273	0.4840	76.7	76.7	-9.5	67.2	0.05326	0.00618
		26.6														
36	12.47	26.7	1.7	1.9	0.00208	0.00067	0.0017	0.0017	0.957	0.0321	9.6	9.6	-7.9	1.7	0.00130	0.00036
	12.48	26.8	19.5	10.9	0.02451	0.00391	0.0195	0.0098	1.941	0.2225	29.9	29.9	-10.4	19.5	0.01535	0.00208
	12.49	26.9														
	12.50	26.10	36.6	20.8	0.04609	0.00751	0.0367	0.0188	1.899	0.2985	49.1	49.1	-12.5	36.6	0.02887	0.00400
	12.51	26.11	53.1	31.6	0.06668	0.01139	0.0531	0.0285	1.815	0.3428	67.3	67.3	-14.2	53.1	0.04177	0.00606
	12.52	26.12	65.5	40.3	0.08277	0.01464	0.0659	0.0366	1.755	0.3687	80.7	80.7	-15.2	65.5	0.05184	0.00779
37	12.53	26.13	45.0	26.8	0.05673	0.00969	0.0452	0.0242	1.808	0.3162	56.7	56.7	-11.7	45.0	0.03554	0.00516
38	12.54	26.14	55.1	33.3	0.06945	0.01202	0.0553	0.0301	1.784	0.3451	68.5	68.5	-13.4	55.1	0.04350	0.00640
39	12.55	26.15	66.2	40.0	0.08317	0.01441	0.0662	0.0361	1.780	0.3772	80.5	80.5	-14.3	66.2	0.05209	0.00767
40	12.56	26.16	33.9	20.5	0.04290	0.00743	0.0342	0.0186	1.786	0.2711	44.9	44.9	-11.0	33.9	0.02687	0.00395
41	12.57	26.17	21.8	13.8	0.02751	0.00499	0.0219	0.0125	1.706	0.2073	31.8	31.8	-10.1	21.8	0.01723	0.00266
42	12.58	26.18														
	12.59	26.19														
	12.60	26.20	43.7	26.4	0.05518	0.00955	0.0440	0.0239	1.794	0.3076	55.9	55.9	-12.2	43.7	0.03456	0.00509
43	12.61	26.21	47.8	28.4	0.06038	0.01031	0.0481	0.0258	1.815	0.3261	60.6	60.5	-12.8	47.8	0.03782	0.00549
44	12.62	26.22	50.9	29.7	0.06429	0.01076	0.0512	0.0269	1.851	0.3433	63.4	63.4	-12.6	50.9	0.04027	0.00573
45	12.63	26.23	40.7	25.5	0.05133	0.00924	0.0409	0.0231	1.714	0.2854	53.4	53.4	-12.7	40.7	0.03215	0.00492
47	12.64	26.24	43.4	26.4	0.05478	0.00957	0.0436	0.0240	1.771	0.3036	55.8	55.8	-12.4	43.4	0.03431	0.00510
48	12.65	26.25	44.0	26.2	0.05591	0.00957	0.0445	0.0239	1.817	0.3132	56.1	56.2	-12.2	44.0	0.03502	0.00509
49	12.66	26.26	41.9	25.9	0.05269	0.00937	0.0420	0.0234	1.743	0.2926	54.5	54.4	-12.6	41.9	0.03300	0.00499
51	12.68	27.1	8.9	7.1	0.01120	0.00258	0.0089	0.0065	0.768	0.1041	14.5	14.5	-5.6	8.9	0.00702	0.00137
	12.69	27.2	25.7	12.4	0.03241	0.00447	0.0258	0.0112	1.306	0.2960	33.5	33.5	-7.8	25.7	0.02030	0.00238
	12.70	27.3	44.8	19.4	0.05641	0.00700	0.0449	0.0175	1.454	0.4340	54.2	54.2	-9.4	44.8	0.03533	0.00373
	12.71	27.4	62.0	27.0	0.07816	0.00975	0.0623	0.0244	1.408	0.5083	72.8	72.8	-10.7	62.0	0.04896	0.00519
	12.72	27.5	80.3	36.0	0.10100	0.01298	0.0804	0.0325	1.371	0.5605	92.2	92.2	-11.9	80.3	0.06326	0.00691
	12.73	27.6	95.8	45.0	0.12100	0.01631	0.0964	0.0408	1.319	0.5853	106.8	106.8	-11.0	95.8	0.07581	0.00868
	12.74	27.7	111.5	54.9	0.14060	0.01987	0.1120	0.0497	1.241	0.6017	123.1	123.1	-11.6	111.5	0.08809	0.01058
	12.75	27.8	121.4	61.6	0.15270	0.02221	0.1216	0.0556	1.197	0.6087	133.2	133.2	-11.7	121.4	0.09563	0.01183
50	12.76	27.9	81.3	22.5	0.10220	0.00810	0.0814	0.0203	2.280	0.9135	83.4	83.4	-2.1	81.3	0.06399	0.00431

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
	12.77	27.10	96.6	28.1	0.12160	0.01015	0.0969	0.0254	2.125	0.9474	101.9	101.9	-5.3	96.6	0.07617	0.00540
	12.78	27.11	107.0	32.5	0.13430	0.01170	0.1070	0.0293	2.025	0.9537	114.3	114.3	-7.3	107.0	0.08415	0.00623
52	12.79	27.12	93.0	26.5	0.11690	0.00957	0.0931	0.0240	2.152	0.9467	97.4	97.4	-4.4	93.0	0.07323	0.00510
53	12.80	27.13	100.9	29.2	0.12740	0.01059	0.1015	0.0265	2.126	0.9733	107.4	107.4	-6.5	100.9	0.07980	0.00564
54	12.81	27.14	109.2	32.4	0.13730	0.01169	0.1094	0.0293	2.078	0.9863	117.7	117.7	-8.5	109.2	0.08600	0.00623
		27.15														
55	12.82	27.16	84.3	24.2	0.10600	0.00874	0.0845	0.0219	2.149	0.8960	87.4	87.4	-3.2	84.3	0.06642	0.00465
57	12.83	27.17	93.1	26.8	0.11720	0.00966	0.0934	0.0242	2.140	0.9414	97.9	97.9	-4.7	93.1	0.07342	0.00514
58	12.84	27.18	94.7	26.7	0.11890	0.00961	0.0947	0.0240	2.187	0.9674	100.7	100.6	-6.0	94.7	0.07449	0.00512
		27.19														
59	12.85	27.20	97.2	26.3	0.12170	0.00946	0.0970	0.0237	2.279	1.0180	103.2	103.1	-6.0	97.2	0.07624	0.00504
60	12.86	27.21	90.8	27.2	0.11450	0.00983	0.0912	0.0246	2.072	0.8937	95.5	95.6	-4.8	90.8	0.07174	0.00523
62	12.87	27.22														
	12.88	27.23	94.1	26.8	0.11800	0.00965	0.0940	0.0242	2.168	0.9518	98.8	98.8	-4.7	94.1	0.07392	0.00514
63	12.89	27.24	94.5	27.0	0.11890	0.00974	0.0947	0.0244	2.178	0.9542	98.9	98.9	-4.4	94.5	0.07446	0.00518
64	12.90	27.25	92.8	26.7	0.11710	0.00966	0.0933	0.0242	2.163	0.9401	97.4	97.4	-4.6	92.8	0.07333	0.00514
66	13.1	28.1	1.1	14.2	0.00085	0.00273	0.0006	0.0057	0.048	0.0019	14.1	14.2	-13.1	1.1	0.00085	0.00273
	13.3	28.2	33.7	22.9	0.02653	0.00440	0.0176	0.0092	0.929	0.2035	47.5	47.5	-13.9	33.7	0.02653	0.00440
	13.4	28.3	63.8	34.1	0.05008	0.00653	0.0332	0.0136	1.167	0.3551	77.0	77.0	-13.2	63.8	0.05008	0.00653
	13.5	28.4	91.6	46.3	0.07241	0.00893	0.0481	0.0186	1.224	0.4516	101.5	101.5	-9.9	91.6	0.07241	0.00893
	13.6	28.5	99.6	50.7	0.07849	0.00975	0.0521	0.0203	1.209	0.4665	106.6	106.6	-7.0	99.6	0.07849	0.00975
65	13.7	28.6	30.4	18.9	0.02388	0.00363	0.0159	0.0076	0.982	0.2106	31.7	31.7	-1.4	30.4	0.02388	0.00363
	13.8	28.7	53.7	21.7	0.04229	0.00417	0.0281	0.0087	1.513	0.4316	59.6	59.6	-5.8	53.7	0.04229	0.00417
	13.9	28.8	82.9	27.8	0.06519	0.00533	0.0433	0.0111	1.864	0.6463	89.7	89.7	-6.8	82.9	0.06519	0.00533
	13.10	28.9	109.4	35.2	0.08644	0.00679	0.0574	0.0142	1.954	0.7742	115.7	115.7	-6.4	109.4	0.08644	0.00679
	13.11	28.10	127.3	41.6	0.10000	0.00798	0.0664	0.0166	1.905	0.8208	131.4	131.4	-4.1	127.3	0.10000	0.00798
67	13.12	28.11	92.1	30.2	0.07279	0.00583	0.0483	0.0122	1.890	0.6973	92.2	92.2	-0.1	92.1	0.07279	0.00583
68	13.13	28.12	106.5	34.1	0.08404	0.00656	0.0558	0.0137	1.937	0.7691	108.4	108.4	-1.9	106.5	0.08404	0.00656
69	13.14	28.13	120.6	38.0	0.09492	0.00730	0.0630	0.0152	1.965	0.8295	124.1	124.1	-3.5	120.6	0.09492	0.00730
70	13.15	28.14	79.3	27.2	0.06222	0.00521	0.0413	0.0109	1.802	0.6170	77.6	77.6	1.7	79.3	0.06222	0.00521
71	13.16	28.15	61.4	23.8	0.04831	0.00457	0.0321	0.0095	1.596	0.4811	59.7	59.7	1.7	61.4	0.04831	0.00457
72	13.17	28.16	91.3	29.9	0.07181	0.00574	0.0477	0.0120	1.894	0.6939	94.0	94.0	-2.7	91.3	0.07181	0.00574
73	13.18	28.17	92.8	29.7	0.07331	0.00572	0.0487	0.0119	1.952	0.7185	96.6	96.6	-3.8	92.8	0.07331	0.00572
74	13.19	28.18	97.6	29.8	0.07686	0.00573	0.0510	0.0120	2.028	0.7691	102.0	101.9	-4.4	97.6	0.07686	0.00573
75	13.20	28.19	88.3	30.1	0.06947	0.00578	0.0461	0.0121	1.820	0.6551	90.2	90.2	-1.9	88.3	0.06947	0.00578
76	13.21	28.20	86.2	30.4	0.06788	0.00584	0.0451	0.0122	1.769	0.6268	87.4	87.3	-1.2	86.2	0.06788	0.00584
77	13.22	28.21	91.3	30.2	0.07191	0.00581	0.0477	0.0121	1.887	0.6868	94.5	94.5	-3.2	91.3	0.07191	0.00581
78	13.23	28.22	92.3	30.1	0.07282	0.00580	0.0483	0.0121	1.916	0.7013	95.2	95.2	-2.9	92.3	0.07282	0.00580

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
79	13.24	28.23	90.5	30.2	0.07096	0.00577	0.0471	0.0120	1.872	0.6782	93.3	93.3	-2.8	90.5	0.07096	0.00577
80	13.25	28.24	101.6	26.2	0.07989	0.00502	0.0530	0.0105	0.000	0.9314	103.6	103.6	-2.0	101.6	0.07989	0.00502
81	13.26	28.25	114.9	29.4	0.09013	0.00561	0.0598	0.0117	0.000	0.9973	117.9	117.9	-3.0	114.9	0.09013	0.00561
82	13.27	28.26	83.0	29.7	0.06510	0.00568	0.0432	0.0118	0.000	0.6052	91.4	91.4	-8.4	83.0	0.06510	0.00568
80A	13.29	29.1	6.0	0.9	0.01569	0.00086	0.0161	0.0028	6.906	0.5861	17.5	17.5	-11.5	6.0	0.00466	0.00017
	13.30	29.2	10.1	4.5	0.02663	0.00435	0.0273	0.0140	2.324	0.2565	22.6	22.6	-12.5	10.1	0.00791	0.00086
	13.31	29.3	14.6	8.2	0.03861	0.00795	0.0395	0.0256	1.853	0.2452	28.0	28.0	-13.4	14.6	0.01147	0.00157
	13.32	29.4	19.6	12.5	0.05168	0.01213	0.0529	0.0390	1.624	0.2489	33.9	33.9	-14.3	19.6	0.01536	0.00239
	13.33	29.5	23.6	16.1	0.06210	0.01560	0.0636	0.0502	1.521	0.2548	38.6	38.6	-15.0	23.6	0.01845	0.00307
		29.6														
81A	13.34	29.7	2.2	-2.6	0.00572	-0.00251	0.0059	-0.0081	-0.869	0.0000	15.6	15.6	-13.5	2.2	0.00170	-0.00049
	13.35	29.8	6.4	1.4	0.01688	0.00135	0.0173	0.0044	4.755	0.4159	21.1	21.1	-14.7	6.4	0.00502	0.00027
	13.36	29.9	11.4	6.1	0.03008	0.00589	0.0308	0.0190	1.938	0.2274	27.4	27.4	-16.0	11.4	0.00894	0.00116
	13.37	29.10	16.8	10.9	0.04441	0.01056	0.0455	0.0340	1.599	0.2277	33.2	33.2	-16.4	16.8	0.01320	0.00208
	13.38	29.11	21.8	15.3	0.05722	0.01479	0.0586	0.0476	1.469	0.2378	38.8	38.8	-17.0	21.8	0.01700	0.00291
	13.39	29.12	26.4	19.8	0.06968	0.01931	0.0713	0.0621	1.377	0.2447	44.2	44.2	-17.8	26.4	0.02071	0.00380
	13.40	29.13	30.8	24.5	0.08139	0.02383	0.0833	0.0766	1.305	0.2503	49.2	49.2	-18.3	30.8	0.02419	0.00469
	13.41	29.14	35.9	29.9	0.09482	0.02904	0.0970	0.0934	1.247	0.2583	54.7	54.7	-18.8	35.9	0.02818	0.00572
	13.42	29.15	41.4	35.6	0.10940	0.03464	0.1120	0.1114	1.199	0.2684	60.5	60.5	-19.1	41.4	0.03251	0.00682
81B	13.43	29.16	3.4	-1.4	0.00913	-0.00139	0.0093	-0.0045	0.000	0.0000	33.9	33.9	-30.5	3.4	0.00271	-0.00027
	13.44	29.17	10.3	10.3	0.02789	0.01028	0.0285	0.0330	1.933	0.1165	41.6	41.6	-31.3	10.3	0.00829	0.00202
	13.45	29.18	24.1	33.5	0.06512	0.03343	0.0666	0.1075	1.390	0.1277	56.0	56.0	-31.9	24.1	0.01935	0.00658
	13.46	29.19	40.2	62.4	0.10920	0.06234	0.1118	0.2004	1.250	0.1487	70.9	70.9	-30.6	40.2	0.03245	0.01227
	13.47	29.20	48.1	77.3	0.13040	0.07720	0.1335	0.2482	1.204	0.1567	77.1	77.1	-29.0	48.1	0.03875	0.01520
	13.48	29.21	53.6	89.1	0.14600	0.08926	0.1494	0.2870	1.167	0.1605	82.4	82.4	-28.8	53.6	0.04337	0.01758
87	13.49	29.22	15.2	22.9	0.04126	0.02288	0.0422	0.0736	1.285	0.0941	40.6	40.6	-25.4	15.2	0.01226	0.00451
88	13.50	29.23	15.4	22.8	0.04184	0.02289	0.0428	0.0736	1.304	0.0961	40.8	40.9	-25.4	15.4	0.01243	0.00451
89	13.51	29.24	15.9	23.6	0.04329	0.02369	0.0443	0.0762	1.305	0.0977	41.9	42.1	-26.1	15.9	0.01286	0.00467
90	13.52	29.25	15.1	23.4	0.04128	0.02346	0.0422	0.0754	1.255	0.0919	40.7	40.7	-25.6	15.1	0.01227	0.00462
91	13.53	29.26	15.2	23.8	0.04159	0.02395	0.0426	0.0770	1.240	0.0910	41.9	41.9	-26.6	15.2	0.01236	0.00472
92	13.54	29.27	14.1	22.4	0.03841	0.02249	0.0393	0.0723	1.218	0.0860	41.4	41.4	-27.4	14.1	0.01142	0.00443
93	13.55	29.28	14.0	22.9	0.03827	0.02304	0.0392	0.0741	1.186	0.0835	41.8	41.8	-27.8	14.0	0.01137	0.00454
94	13.56	29.29	14.3	23.1	0.03912	0.02316	0.0400	0.0745	1.206	0.0858	41.7	41.7	-27.4	14.3	0.01163	0.00456
		30.1														
95	13.59	30.2	7.5	19.2	0.02126	0.01999	0.0218	0.0643	1.154	0.0398	58.8	58.8	-51.3	7.5	0.00632	0.00394
	13.60	30.3	17.2	46.5	0.04891	0.04875	0.0500	0.1567	1.089	0.0570	68.1	68.1	-51.0	17.2	0.01453	0.00960
	13.61	30.4	10.5	32.8	0.03010	0.03454	0.0308	0.1111	0.947	0.0388	60.9	60.9	-50.4	10.5	0.00894	0.00680
101	13.62	30.5	3.4	17.5	0.00987	0.01846	0.0101	0.0594	0.582	0.0137	53.1	53.1	-49.7	3.4	0.00293	0.00364

Q-2

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
95A	13.63	30.6	13.6	43.9	0.03906	0.04649	0.0400	0.1495	0.914	0.0427	65.5	65.5	-51.9	13.6	0.01161	0.00915
101A	13.64	30.7	2.6	17.1	0.00749	0.01829	0.0077	0.0588	0.447	0.0091	52.3	52.3	-49.7	2.6	0.00223	0.00360
102	13.65	30.8	2.1	17.1	0.00612	0.01820	0.0063	0.0585	0.366	0.0068	52.6	52.7	-50.5	2.1	0.00182	0.00358
103	13.66	30.9	2.8	19.7	0.00808	0.02098	0.0083	0.0675	0.418	0.0089	54.5	54.9	-51.7	2.8	0.00240	0.00413
104	13.67	30.10	2.3	19.0	0.00676	0.02045	0.0069	0.0657	0.361	0.0070	52.5	52.5	-50.2	2.3	0.00201	0.00403
106	13.68	30.11	1.9	18.0	0.00554	0.01922	0.0057	0.0618	0.313	0.0055	52.4	52.4	-50.5	1.9	0.00165	0.00378
107	13.69	30.12	2.2	18.6	0.00654	0.01993	0.0067	0.0641	0.357	0.0068	52.9	52.9	-50.6	2.2	0.00194	0.00392
108	13.70	30.13	2.5	18.4	0.00729	0.01968	0.0075	0.0633	0.403	0.0081	52.0	52.0	-49.5	2.5	0.00217	0.00387
109	13.72	31.1	13.8	9.3	0.03752	0.00932	0.0384	0.0300	2.865	0.2004	45.9	45.9	-32.1	13.8	0.01115	0.00184
110	13.73	31.2	13.0	10.2	0.03547	0.01025	0.0363	0.0330	2.458	0.1674	45.6	45.6	-32.6	13.0	0.01054	0.00202
111	13.74	31.3	12.2	10.1	0.03349	0.01023	0.0343	0.0329	2.334	0.1539	44.2	44.3	-32.0	12.2	0.00995	0.00201
112	13.75	31.4	13.2	9.9	0.03610	0.00998	0.0369	0.0321	2.574	0.1765	45.0	44.9	-31.8	13.2	0.01073	0.00197
113	13.76	31.5	14.7	12.2	0.04030	0.01237	0.0412	0.0398	2.317	0.1680	45.0	45.1	-30.4	14.7	0.01197	0.00244
114	13.77	31.6	20.3	51.5	0.05887	0.05511	0.0603	0.1772	1.171	0.0666	70.6	70.6	-50.3	20.3	0.01749	0.01085
115	13.78	31.7	19.2	52.8	0.05572	0.05637	0.0570	0.1812	1.081	0.0599	70.8	71.0	-51.6	19.2	0.01656	0.01110
116	13.79	31.8	18.8	52.5	0.05479	0.05616	0.0561	0.1806	1.067	0.0587	70.9	71.2	-52.1	18.8	0.01628	0.01106
117	13.80	31.9	19.0	52.5	0.05519	0.05627	0.0565	0.1809	1.074	0.0592	69.8	69.8	-50.8	19.0	0.01640	0.01108
118	13.81	31.10	20.9	57.8	0.06120	0.06232	0.0626	0.2004	1.076	0.0624	72.3	72.3	-51.4	20.9	0.01819	0.01227
128	13.82	31.11	17.5	52.7	0.05111	0.05673	0.0523	0.1824	0.986	0.0523	69.1	69.1	-51.6	17.5	0.01519	0.01117
129	13.83	31.12	17.4	52.9	0.05128	0.05734	0.0525	0.1844	0.981	0.0520	69.3	69.5	-51.9	17.4	0.01524	0.01129
130	13.84	31.13	17.8	53.6	0.05261	0.05827	0.0538	0.1873	0.991	0.0532	69.3	69.6	-51.5	17.8	0.01563	0.01147
123	13.85		20.9	61.8	0.06190	0.06734	0.0633	0.2165	1.007	0.0588	71.9	71.9	-51.0	20.9	0.01839	0.01326
122	13.86	31.14	20.7	58.4	0.06105	0.06351	0.0625	0.2042	0.991	0.0610	64.1	64.1	-43.4	20.7	0.01814	0.01251
124	13.87	31.15	20.6	53.9	0.06045	0.05822	0.0619	0.1872	0.993	0.0656	58.2	58.2	-37.7	20.6	0.01796	0.01146
122A	13.88	31.16	2.7	16.7	0.00798	0.01813	0.0082	0.0583	0.452	0.0101	44.1	44.1	-41.4	2.7	0.00237	0.00357
122B	13.89		20.7	58.7	0.06149	0.06427	0.0629	0.2066	0.984	0.0610	67.3	67.3	-46.6	20.7	0.01827	0.01265
124A	13.90	31.17	35.0	87.4	0.10330	0.09493	0.1057	0.3052	1.056	0.0898	78.0	78.0	-43.0	35.0	0.03069	0.01869
125	13.91	31.18	14.3	29.8	0.04148	0.03173	0.0425	0.1020	0.933	0.0684	36.3	36.3	-22.0	14.3	0.01233	0.00625
126	13.92		14.5	29.5	0.04185	0.03136	0.0428	0.1008	0.951	0.0701	38.2	38.2	-23.7	14.5	0.01244	0.00618
127	13.93	31.19	14.7	29.5	0.04236	0.03139	0.0434	0.1009	0.962	0.0714	39.0	39.1	-24.4	14.7	0.01259	0.00618
119	13.94	31.20	15.3	26.5	0.04383	0.02798	0.0449	0.0900	1.009	0.0843	35.9	35.9	-20.7	15.3	0.01303	0.00551
120	13.95	31.21	-5.2	-5.8	-0.01492	-0.00611	-0.0153	-0.0196	1.742	0.0000	16.7	16.7	-21.8	-5.2	-0.00443	-0.00120
121	13.96	31.22	36.5	53.3	0.10380	0.05581	0.1062	0.1794	1.070	0.1540	55.4	55.4	-18.9	36.5	0.03085	0.01099
131	14.1	32.1	20.3	15.8	0.05553	0.01588	0.0568	0.0511	1.300	0.2117	39.8	39.8	-19.4	20.3	0.01650	0.00313
132	14.2		20.9	16.1	0.05721	0.01626	0.0585	0.0523	1.311	0.2163	39.8	39.8	-18.9	20.9	0.01700	0.00320
133	14.3	32.2	22.1	17.2	0.06033	0.01724	0.0617	0.0554	1.300	0.2208	40.4	40.4	-18.3	22.1	0.01793	0.00339
133A	14.4	32.3	24.1	18.6	0.06585	0.01869	0.0674	0.0601	1.311	0.2323	42.2	42.2	-18.1	24.1	0.01957	0.00368
134	14.5	32.4	18.3	14.2	0.04878	0.01393	0.0499	0.0448	1.288	0.1987	38.0	38.0	-19.7	18.3	0.01450	0.00274

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
135	14.6	32.5	16.3	12.9	0.04439	0.01296	0.0454	0.0417	1.275	0.1854	36.7	36.7	-20.5	16.3	0.01319	0.00255
139	14.7	32.6	19.3	15.3	0.05282	0.01540	0.0541	0.0495	1.281	0.2026	38.8	38.8	-19.5	19.3	0.01570	0.00303
140	14.8	32.7	21.2	17.3	0.05769	0.01733	0.0590	0.0557	1.235	0.2054	40.9	40.9	-19.7	21.2	0.01714	0.00341
141	14.9	32.8	23.6	19.1	0.06455	0.01925	0.0661	0.0619	1.249	0.2189	42.6	42.6	-19.0	23.6	0.01918	0.00379
142	14.10	32.9	17.4	14.2	0.04732	0.01421	0.0484	0.0457	1.235	0.1861	37.9	37.9	-20.5	17.4	0.01406	0.00280
143	14.11	32.10	16.4	13.2	0.04443	0.01319	0.0455	0.0424	1.249	0.1825	36.8	36.9	-20.5	16.4	0.01320	0.00260
136	14.12	32.11	19.6	15.5	0.05336	0.01551	0.0546	0.0499	1.278	0.2042	38.9	38.9	-19.4	19.6	0.01586	0.00305
137	14.13	32.12	4.0	1.7	0.01090	0.00167	0.0112	0.0054	2.736	0.1750	24.0	24.0	-20.0	4.0	0.00324	0.00033
138	14.14	32.13	33.9	26.7	0.09205	0.02668	0.0942	0.0858	1.123	0.2689	52.9	52.9	-19.1	33.9	0.02735	0.00525
		33.1														
		33.2														
		33.3														
	15.1	34.1														
	15.2	34.2														
	15.3	34.3	-3.1	15.5	-0.00242	0.00291	-0.0016	0.0061	0.000	0.0000	3.9	3.9	-7.0	-3.1	-0.00242	0.00291
	15.4	34.4	25.5	16.8	0.02016	0.00323	0.0134	0.0067	0.000	0.1832	38.6	38.6	-13.1	25.5	0.02016	0.00323
	15.5	34.5	31.4	17.4	0.02484	0.00336	0.0165	0.0070	0.000	0.2411	46.9	46.9	-15.5	31.4	0.02484	0.00336
	15.6	34.6	38.6	18.5	0.03058	0.00356	0.0203	0.0074	0.000	0.3106	55.3	55.3	-16.7	38.6	0.03058	0.00356
	15.7	34.7	46.0	20.3	0.03645	0.00392	0.0242	0.0082	0.000	0.3674	64.3	64.3	-18.3	46.0	0.03645	0.00392
	15.8	34.8	54.4	23.0	0.04266	0.00440	0.0283	0.0092	0.000	0.4141	74.0	74.0	-19.6	54.4	0.04266	0.00440
	15.9	34.9	62.7	25.9	0.04970	0.00501	0.0330	0.0104	0.000	0.4576	83.6	83.6	-20.9	62.7	0.04970	0.00501
	15.10	34.10	70.9	29.2	0.05631	0.00566	0.0374	0.0118	0.000	0.4888	92.1	92.1	-21.1	70.9	0.05631	0.00566
	15.11	34.11	81.4	33.5	0.06438	0.00647	0.0427	0.0135	0.000	0.5229	103.7	103.7	-22.3	81.4	0.06438	0.00647
	15.12	34.12	92.9	38.5	0.07318	0.00740	0.0486	0.0154	0.000	0.5534	115.6	115.6	-22.7	92.9	0.07318	0.00740
	15.13	34.13	104.2	44.0	0.08197	0.00844	0.0544	0.0176	0.000	0.5751	127.6	127.6	-23.3	104.2	0.08197	0.00844
	15.14	34.14	115.9	49.6	0.09200	0.00960	0.0611	0.0200	0.000	0.6013	138.5	138.5	-22.6	115.9	0.09200	0.00960
	15.15	34.15	129.6	56.9	0.10270	0.01099	0.0681	0.0229	0.000	0.6195	151.8	151.8	-22.3	129.6	0.10270	0.01099
	15.16	34.16	141.4	63.8	0.11180	0.01230	0.0742	0.0257	0.000	0.6288	163.0	163.0	-21.6	141.4	0.11180	0.01230
	15.17	34.17	154.5	71.9	0.12220	0.01386	0.0811	0.0289	0.000	0.6378	175.4	175.4	-20.9	154.5	0.12220	0.01386
	15.18	34.18	166.3	79.5	0.13170	0.01535	0.0874	0.0320	0.000	0.6443	185.6	185.6	-19.3	166.3	0.13170	0.01535
	15.19	34.19	180.3	88.8	0.14190	0.01706	0.0942	0.0356	0.000	0.6485	198.0	198.0	-17.7	180.3	0.14190	0.01706
	15.20	34.20	22.6	17.1	0.01781	0.00330	0.0118	0.0069	0.000	0.1491	22.1	22.1	0.5	22.6	0.01781	0.00330
	15.21	34.21	19.4	17.2	0.01531	0.00331	0.0102	0.0069	0.000	0.1183	17.6	17.6	1.8	19.4	0.01531	0.00331
	15.23	35.1	15.5	17.5	0.01222	0.00338	0.0081	0.0070	0.000	0.0827	12.3	12.3	3.2	15.5	0.01222	0.00338
	15.24	35.2	11.1	17.8	0.00871	0.00342	0.0058	0.0071	0.000	0.0491	6.2	6.2	4.8	11.1	0.00871	0.00342
	15.25	35.3	5.0	7.2	0.00673	0.00280	0.0055	0.0072	0.000	0.0451	4.7	4.7	0.3	5.0	0.00397	0.00138
	15.26	35.4	9.4	6.8	0.01257	0.00265	0.0102	0.0068	0.000	0.1217	10.6	10.6	-1.3	9.4	0.00742	0.00131
	15.27	35.5	13.5	6.6	0.01816	0.00261	0.0148	0.0067	0.000	0.2151	16.6	16.6	-3.1	13.5	0.01072	0.00128

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
	15.28	35.6	17.0	6.9	0.02279	0.00271	0.0185	0.0069	0.000	0.2904	22.0	22.0	-5.0	17.0	0.01345	0.00133
	15.29	35.7	21.3	7.5	0.02854	0.00294	0.0232	0.0075	0.000	0.3762	27.8	27.8	-6.5	21.3	0.01685	0.00144
	15.30	35.8	25.6	8.4	0.03433	0.00331	0.0279	0.0085	0.000	0.4400	33.8	33.8	-8.1	25.6	0.02027	0.00163
	15.31	35.9	30.0	9.6	0.04008	0.00377	0.0326	0.0096	0.000	0.4876	39.4	39.4	-9.4	30.0	0.02367	0.00185
	15.32	35.10	34.7	11.0	0.04646	0.00431	0.0378	0.0110	0.000	0.5319	45.3	45.3	-10.6	34.7	0.02743	0.00212
	15.33	35.11	40.0	12.6	0.05359	0.00496	0.0436	0.0127	0.000	0.5735	51.6	51.6	-11.6	40.0	0.03164	0.00244
	15.34	35.12	46.2	14.6	0.06183	0.00571	0.0503	0.0146	0.000	0.6172	58.7	58.7	-12.4	46.2	0.03651	0.00281
	15.35	35.13	53.2	17.1	0.07107	0.00667	0.0579	0.0170	0.000	0.6513	66.5	66.5	-13.3	53.2	0.04196	0.00328
	15.36	35.14	59.4	19.7	0.07960	0.00773	0.0648	0.0198	0.000	0.6658	73.6	73.6	-14.2	59.4	0.04700	0.00380
	15.37	35.15	66.6	22.8	0.08956	0.00897	0.0729	0.0229	0.000	0.6846	81.5	81.5	-14.9	66.6	0.05288	0.00441
	15.38	35.16	74.1	26.2	0.09931	0.01026	0.0808	0.0262	0.000	0.6989	89.8	89.8	-15.7	74.1	0.05863	0.00505
	15.39	35.17	80.9	29.6	0.10850	0.01161	0.0883	0.0297	0.000	0.7050	97.6	97.6	-16.7	80.9	0.06405	0.00571
	15.40	35.18	88.1	33.4	0.11780	0.01306	0.0959	0.0334	0.000	0.7094	105.7	105.7	-17.7	88.1	0.06955	0.00642
	15.41	35.19	91.3	35.0	0.12250	0.01376	0.0997	0.0352	0.000	0.7137	109.3	109.3	-18.0	91.3	0.07232	0.00677
	15.42	35.20	95.1	37.2	0.12760	0.01462	0.1039	0.0374	0.000	0.7147	113.6	113.6	-18.4	95.1	0.07536	0.00719
	15.43	35.21	99.1	39.5	0.13290	0.01553	0.1082	0.0397	0.000	0.7147	118.2	118.2	-19.1	99.1	0.07845	0.00764
	15.44	35.22	101.9	41.3	0.13630	0.01617	0.1109	0.0414	0.000	0.7127	121.3	121.3	-19.4	101.9	0.08045	0.00795
	15.45	35.23	106.1	43.7	0.14230	0.01716	0.1158	0.0439	0.000	0.7166	126.0	126.0	-20.0	106.1	0.08399	0.00844
	15.46	35.24	110.6	46.1	0.14760	0.01803	0.1202	0.0461	0.000	0.7207	131.2	131.2	-20.7	110.6	0.08716	0.00887
	15.47	35.25	113.7	48.1	0.15190	0.01882	0.1236	0.0481	0.000	0.7206	134.8	134.8	-21.1	113.7	0.08965	0.00925
	15.48	35.26	116.9	50.2	0.15700	0.01975	0.1278	0.0505	0.000	0.7217	138.3	138.3	-21.4	116.9	0.09268	0.00971
	15.49	35.27	120.3	52.6	0.16150	0.02067	0.1315	0.0529	0.000	0.7196	142.4	142.4	-22.2	120.3	0.09537	0.01017
		35.28														
	15.50	35.29	127.4	57.6	0.17040	0.02254	0.1387	0.0576	0.000	0.7149	147.7	147.7	-20.2	127.4	0.10060	0.01109
	15.51	35.30	134.1	62.3	0.17990	0.02446	0.1464	0.0626	0.000	0.7146	154.9	154.9	-20.7	134.1	0.10620	0.01203
	15.54	36.1	140.2	67.3	0.18750	0.02635	0.1526	0.0674	0.000	0.7058	161.6	161.6	-21.4	140.2	0.11070	0.01296
		36.2														
	15.55	37.1	146.4	72.2	0.19510	0.02819	0.1588	0.0721	0.000	0.7007	168.3	168.3	-21.9	146.4	0.11520	0.01386
	15.57	38.1	91.8	34.2	0.12130	0.01322	0.0987	0.0338	0.000	0.7325	107.0	107.0	-15.2	91.8	0.07162	0.00650
	15.58	38.2	171.3	80.9	0.13370	0.01540	0.0887	0.0321	0.000	0.6566	190.6	190.6	-19.3	171.3	0.13370	0.01540
	15.59	38.3	-3.8	17.3	-0.00289	0.00325	-0.0019	0.0068	0.000	0.0000	-5.3	-5.3	1.5	-3.8	-0.00289	0.00325
	15.60	38.4	-0.2	15.6	-0.00012	0.00292	-0.0001	0.0061	0.000	0.0000	0.1	0.1	-0.3	-0.2	-0.00012	0.00292
	15.61	38.5	11.8	17.2	0.00907	0.00323	0.0060	0.0067	0.000	0.0553	13.8	13.8	-2.0	11.8	0.00907	0.00323
	15.62	38.6	17.9	17.5	0.01378	0.00328	0.0091	0.0068	0.000	0.1020	22.0	22.0	-4.1	17.9	0.01378	0.00328
	15.63	38.7	26.5	17.6	0.02035	0.00329	0.0135	0.0069	0.000	0.1825	34.0	34.0	-7.5	26.5	0.02035	0.00329
	15.64	38.8	31.2	18.1	0.02400	0.00339	0.0159	0.0071	0.000	0.2267	40.9	40.9	-9.7	31.2	0.02400	0.00339
	15.65	38.9	38.4	19.0	0.02958	0.00358	0.0196	0.0075	0.000	0.2943	49.9	49.9	-11.6	38.4	0.02958	0.00358
	15.66	38.10	46.3	20.9	0.03554	0.00391	0.0236	0.0082	0.000	0.3544	59.7	59.7	-13.4	46.3	0.03554	0.00391

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
	15.67	38.11	54.5	23.2	0.04206	0.00437	0.0279	0.0091	0.000	0.4088	69.0	69.0	-14.4	54.5	0.04206	0.00437
	15.68	38.12	63.2	26.3	0.04865	0.00494	0.0323	0.0103	0.000	0.4498	78.8	78.8	-15.7	63.2	0.04865	0.00494
	15.69	38.13	74.3	30.4	0.05711	0.00570	0.0379	0.0119	0.000	0.4953	90.0	90.0	-15.8	74.3	0.05711	0.00570
	15.70	38.14	84.2	34.5	0.06502	0.00650	0.0432	0.0136	0.000	0.5277	99.6	99.6	-15.4	84.2	0.06502	0.00650
	15.71	38.15	96.0	39.9	0.07382	0.00747	0.0490	0.0156	0.000	0.5554	111.7	111.7	-15.7	96.0	0.07382	0.00747
	15.72	38.16	109.0	45.5	0.08366	0.00851	0.0555	0.0178	0.000	0.5883	124.4	124.4	-15.5	109.0	0.08366	0.00851
	15.73	38.17	120.8	51.6	0.09272	0.00967	0.0616	0.0202	0.000	0.6043	136.5	136.5	-15.7	120.8	0.09272	0.00967
	15.74	38.18	133.4	58.3	0.10290	0.01097	0.0683	0.0229	0.000	0.6224	148.9	148.9	-15.5	133.4	0.10290	0.01097
	15.75	38.19	146.5	66.0	0.11260	0.01237	0.0747	0.0258	0.000	0.6320	162.0	162.0	-15.5	146.5	0.11260	0.01237
	15.76	38.20	161.0	74.5	0.12360	0.01395	0.0821	0.0291	0.000	0.6448	176.5	176.5	-15.4	161.0	0.12360	0.01395
	15.77	38.21	172.4	82.3	0.13210	0.01539	0.0877	0.0321	0.000	0.6458	187.1	187.1	-14.7	172.4	0.13210	0.01539
	15.78	38.22	96.3	40.1	0.07402	0.00752	0.0491	0.0157	0.000	0.5545	109.6	109.6	-13.3	96.3	0.07402	0.00752
	15.80	39.1	6.7	18.8	0.00515	0.00351	0.0034	0.0073	0.000	0.0218	3.7	3.7	3.0	6.7	0.00515	0.00351
	15.81	39.2	82.5	34.4	0.06321	0.00643	0.0420	0.0134	0.000	0.5111	100.1	100.1	-17.6	82.5	0.06321	0.00643
	15.82	39.3	6.0	18.0	0.00462	0.00337	0.0031	0.0070	0.000	0.0193	8.8	8.8	-2.8	6.0	0.00462	0.00337
	15.83	39.4	31.1	17.5	0.02394	0.00329	0.0159	0.0069	0.000	0.2328	39.3	39.3	-8.2	31.1	0.02394	0.00329
	15.84	39.5	44.9	19.9	0.03462	0.00374	0.0230	0.0078	0.000	0.3560	56.6	56.6	-11.8	44.9	0.03462	0.00374
	15.85	39.6	61.1	24.7	0.04692	0.00464	0.0311	0.0097	0.000	0.4537	75.0	75.0	-13.9	61.1	0.04692	0.00464
	15.86	39.7	87.2	34.6	0.06681	0.00647	0.0443	0.0135	0.000	0.5526	103.1	103.1	-15.8	87.2	0.06681	0.00647
	15.87	39.8	104.9	42.6	0.08037	0.00796	0.0534	0.0166	0.000	0.5925	120.9	120.9	-16.1	104.9	0.08037	0.00796
	15.88	39.9	128.3	54.4	0.09865	0.01020	0.0655	0.0213	0.000	0.6286	144.3	144.3	-16.0	128.3	0.09865	0.01020
	15.89	39.10	154.5	69.3	0.11910	0.01304	0.0791	0.0272	0.000	0.6525	169.7	169.7	-15.1	154.5	0.11910	0.01304
	15.91	40.1	181.4	86.5	0.13960	0.01624	0.0927	0.0339	0.000	0.6646	195.8	195.8	-14.4	181.4	0.13960	0.01624
	15.92	40.2	99.3	40.0	0.07624	0.00749	0.0506	0.0156	0.000	0.5813	112.4	112.4	-13.1	99.3	0.07624	0.00749
	16.1	41.1	160.3	71.4	0.11830	0.01285	0.0785	0.0268	0.000	0.6555	178.2	178.2	-17.9	160.3	0.11830	0.01285
	16.2	42.1	156.3	70.0	0.11780	0.01285	0.0782	0.0268	0.000	0.6508	173.7	173.7	-17.4	156.3	0.11780	0.01285
	16.3	42.2	49.5	20.8	0.03801	0.00390	0.0252	0.0081	0.000	0.3936	60.9	60.9	-11.4	49.5	0.03801	0.00390
	16.4	42.3	48.2	20.0	0.03700	0.00375	0.0246	0.0078	0.000	0.3927	62.5	62.5	-14.3	48.2	0.03700	0.00375
	16.5	42.4	49.5	19.3	0.04421	0.00443	0.0311	0.0098	0.000	0.4476	25.7	25.7	23.8	49.5	0.03820	0.00363
	16.6	42.5	48.9	17.5	0.05109	0.00495	0.0382	0.0116	0.000	0.5122	25.6	25.6	23.3	48.9	0.03779	0.00330
	16.7	42.6	49.3	15.9	0.06436	0.00607	0.0524	0.0155	0.000	0.6165	27.3	27.3	22.0	49.3	0.03800	0.00298
	16.8	42.7	65.1	21.5	0.08466	0.00818	0.0689	0.0209	0.000	0.6899	57.8	57.8	7.2	65.1	0.04999	0.00402
	16.9	42.8	78.0	27.2	0.10170	0.01039	0.0827	0.0266	0.000	0.7148	80.0	80.0	-2.0	78.0	0.06002	0.00511
	16.10	42.9	92.4	34.2	0.12030	0.01305	0.0980	0.0334	0.000	0.7331	100.1	100.1	-7.8	92.4	0.07105	0.00642
	16.11	42.10	108.1	43.1	0.14110	0.01645	0.1148	0.0421	0.000	0.7381	117.6	117.6	-9.5	108.1	0.08328	0.00809
	16.12	42.11	122.0	51.8	0.15850	0.01969	0.1290	0.0503	0.000	0.7342	132.9	132.9	-10.9	122.0	0.09355	0.00968
	16.13	42.12	136.7	61.5	0.17840	0.02350	0.1452	0.0601	0.000	0.7346	150.1	150.1	-13.4	136.7	0.10530	0.01156
	16.14	42.13	142.9	66.3	0.18700	0.02541	0.1522	0.0650	0.000	0.7291	157.2	157.2	-14.4	142.9	0.11040	0.01249

Rotor Thrust Parameters

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Rotor Thrust lb.	Rotor Torque in.-lb.	CT/sigma	CQ/sigma	CT (prop)	CP (prop)	Cruise Propulsive Efficiency	Hover Figure of Merit	Thrust Shaft Axis lb.	Bal. Thrust Normal to Tip Path Plane, lb.	Sum of Pushrod Loads lb.	RTR Thrust wrt TPP lb.	CT/sigma (reference diameter)	CQ/sigma (reference diameter)
	16.15	42.14	50.1	15.4	0.07328	0.00688	0.0622	0.0183	0.000	0.6753	29.7	29.7	20.4	50.1	0.03841	0.00288
	16.16	42.15	48.1	13.9	0.08548	0.00802	0.0776	0.0229	0.000	0.7537	49.1	49.1	-1.0	48.1	0.03697	0.00260
	16.17	42.16	49.9	14.0	0.10900	0.01067	0.1058	0.0326	0.000	0.8439	49.0	49.0	0.9	49.9	0.03828	0.00262
	16.18	42.17	51.3	14.8	0.12850	0.01347	0.1302	0.0428	0.000	0.8745	45.9	45.9	5.4	51.3	0.03951	0.00277
	16.19	42.18	58.9	18.1	0.14830	0.01663	0.1502	0.0529	0.000	0.8772	60.7	60.7	-1.8	58.9	0.04558	0.00343
	16.20	42.19	66.6	22.2	0.16660	0.02024	0.1687	0.0644	0.000	0.8586	72.7	72.7	-6.1	66.6	0.05121	0.00417
	16.21	42.20	73.6	26.4	0.18380	0.02404	0.1862	0.0765	0.000	0.8380	80.9	80.9	-7.2	73.6	0.05651	0.00495
	16.22	42.21	81.0	30.8	0.20250	0.02800	0.2051	0.0891	0.000	0.8319	89.0	89.0	-8.0	81.0	0.06226	0.00577
	16.23	42.22	86.9	35.1	0.21760	0.03202	0.2204	0.1019	0.000	0.8102	96.2	96.2	-9.3	86.9	0.06690	0.00660
	16.24	42.23	91.7	41.0	0.22830	0.03718	0.2312	0.1183	0.000	0.7496	104.2	104.2	-12.4	91.7	0.07017	0.00766
	16.25	42.24	94.6	48.8	0.23640	0.04443	0.2394	0.1414	0.000	0.6610	111.4	111.4	-16.9	94.6	0.07266	0.00915
	16.26	42.25	96.6	57.0	0.24260	0.05209	0.2457	0.1657	0.000	0.5865	117.6	117.6	-21.0	96.6	0.07459	0.01073
			99.6	66.7	0.24920	0.06075	0.2524	0.1933	0.000	0.5234	124.9	124.9	-25.4	99.6	0.07662	0.01251
			-10.2	-5.8	-0.01490	-0.00610	-0.0153	-0.0196	-0.869	0.0000	-5.3	-5.3	-52.1	-10.2	-0.00820	-0.00120
			181.4	89.1	0.24920	0.09493	0.2524	0.3052	6.906	1.0180	198.0	198.0	23.8	181.4	0.14190	0.01869
49	12.67		1.2	0.3	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	0.4	0.4	0.9	1.2	0.00000	0.00000
64	12.91		0.4	0.1	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-1.1	-1.1	1.5	0.4	0.00000	0.00000
82	13.28		-1.2	0.0	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-3.4	-3.4	2.2	-1.2	0.00000	0.00000
94	13.57		-2.0	0.0	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-5.4	-5.4	3.4	-2.0	0.00000	0.00000
94	13.58		-2.0	-0.1	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-5.1	-5.1	3.1	-2.0	0.00000	0.00000
108	13.71		-2.6	0.2	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-5.8	-5.8	3.2	-2.6	0.00000	0.00000
	13.97		-0.2	-0.1	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-1.8	-1.8	1.6	-0.2	0.00000	0.00000
138	14.17		0.0	0.2	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-0.3	-0.3	0.2	0.0	0.00000	0.00000
	15.79		-2.1	-0.1	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-1.4	-1.4	-0.7	-2.1	0.00000	0.00000
	15.90		1.8	0.0	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-2.0	-2.0	3.9	1.8	0.00000	0.00000
	15.93		2.7	0.0	0.00000	0.00000	0.0000	0.0000	0.000	0.0000	-2.7	-2.7	5.5	2.7	0.00000	0.00000

APPENDIX D

Shaft and Wind Axis Loads

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
		24.1																
		24.2																
2	12.2	25.1	-4.84	-0.10	-22.72	0.63	2.53	-14.14	-5.17	-4.73	-6.20	8.15	0.89	-0.10	2.53	7.61	-11.94	2.13
	12.3	25.2	-4.10	0.25	-50.07	0.54	1.97	-29.02	-5.76	-4.59	-6.19	31.12	-13.11	0.25	1.97	14.89	-24.91	4.36
	12.4		-3.20	0.51	-65.12	0.73	3.31	-41.03	-4.04	-3.92	-5.39	46.50	-22.99	0.51	3.31	21.06	-35.22	6.18
8	12.5	25.3	-4.57	0.24	-40.14	1.06	4.08	-24.96	-3.96	-5.05	-6.38	23.75	-8.35	0.24	4.08	13.33	-21.13	3.78
9	12.6	25.4	-4.64	0.31	-56.62	0.85	3.71	-34.18	-4.48	-5.04	-6.42	37.58	-16.27	0.31	3.71	17.78	-29.20	5.16
10	12.7	25.5	-5.11	0.26	-74.39	0.97	3.13	-44.32	-5.23	-4.90	-6.29	52.86	-24.36	0.26	3.13	22.85	-37.99	6.68
11	12.8	25.6	-4.65	0.13	-21.98	0.81	4.18	-16.08	-3.00	-5.05	-6.10	9.11	0.13	0.13	4.18	8.71	-13.54	2.43
12	12.9	25.7	-5.20	-0.13	-3.22	0.88	3.40	-7.15	-2.71	-4.83	-5.87	-6.21	9.60	-0.13	3.40	4.34	-5.75	1.07
18	12.10	28.8	-4.47	0.09	-38.95	0.53	3.40	-24.27	-4.33	-5.15	-6.57	22.09	-7.54	0.09	3.40	12.55	-20.78	3.66
19	12.11	25.9	-5.23	-0.18	-44.55	0.60	3.40	-26.54	-4.62	-5.38	-7.18	26.30	-9.18	-0.18	3.40	13.82	-22.67	4.00
20	12.12	25.10	-5.95	-0.32	-51.79	0.99	3.03	-29.77	-5.09	-5.36	-7.13	32.62	-11.91	-0.32	3.03	15.71	-25.30	4.49
21	12.13	25.11	-3.83	0.20	-34.56	0.94	3.26	-22.76	-4.04	-4.73	-6.04	19.02	-6.54	0.20	3.26	12.18	-19.26	3.44
22	12.14	25.12	-3.64	0.32	-30.06	0.94	3.22	-20.88	-4.04	-4.50	-5.86	15.39	-4.66	0.32	3.22	11.23	-17.64	3.15
26	12.15	25.13	-4.38	0.04	-42.51	0.80	3.46	-26.23	-4.41	-5.06	-6.57	25.15	-9.36	0.04	3.46	13.74	-22.36	3.96
27	12.16	25.14	-4.53	0.91	-43.34	1.14	3.30	-26.98	-3.95	-4.66	-6.31	26.91	-10.19	0.91	3.30	14.40	-22.85	4.08
28	12.17	25.15	-4.18	-0.76	-39.99	0.77	3.34	-24.79	-4.94	-5.16	-6.52	22.36	-8.00	-0.76	3.34	13.01	-21.12	3.75
1	12.18	25.16	-3.93	0.90	-9.20	0.60	3.86	-18.17	1.37	-1.82	-3.11	6.24	2.90	0.90	3.86	3.73	-17.79	2.75
	12.19	25.17	-3.47	1.28	-42.06	0.61	3.97	-22.64	-1.47	-2.82	-4.19	33.67	-2.35	1.28	3.97	4.48	-22.20	3.41
	12.20	25.18	-3.08	1.76	-71.86	0.61	3.86	-29.30	-2.59	-3.01	-4.49	61.39	-7.45	1.76	3.86	5.58	-28.77	4.42
	12.21	25.19	-3.02	1.82	-70.58	0.76	4.32	-29.14	-2.13	-2.92	-4.43	60.73	-7.43	1.82	4.32	5.71	-28.58	4.40
	12.22	25.20	-2.04	2.38	-94.95	0.62	4.39	-37.12	-2.06	-2.53	-3.87	85.60	-12.46	2.38	4.39	6.82	-36.49	5.60
	12.23	25.21	-1.00	2.52	-112.30	-3.06	1.55	-46.07	-1.58	1.69	-2.71	108.30	-17.59	2.52	1.55	4.78	-45.92	6.95
3	12.24	25.22	-1.86	1.03	-80.60	-5.15	1.14	-33.65	-1.56	2.02	-3.93	76.36	-11.07	1.03	1.14	0.55	-34.03	5.07
4	12.25	25.23	-2.63	0.75	-96.93	-4.81	1.16	-37.83	-1.75	1.52	-3.67	92.14	-13.13	0.75	1.16	1.66	-38.10	5.71
5	12.26	25.24	-4.05	0.70	-114.80	-4.20	2.04	-42.35	-2.07	1.27	-3.24	109.90	-14.32	0.70	2.04	2.86	-42.46	6.39
6	12.27	25.25	-1.28	1.02	-62.88	-4.94	1.57	-29.65	-1.49	2.69	-4.00	59.41	-9.01	1.02	1.57	0.20	-30.06	4.48
7	12.28	25.26	-1.37	0.99	-46.63	-4.68	1.12	-26.08	-1.37	3.55	-4.07	44.32	-6.26	0.99	1.12	-0.17	-26.49	3.95
13	12.29	25.27	-1.71	1.09	-81.78	-5.04	1.01	-33.78	-1.86	2.00	-4.01	77.08	-11.43	1.09	1.01	0.72	-34.14	5.09
14	12.30	25.28	-3.32	0.75	-88.35	-4.78	0.94	-33.87	-2.13	1.77	-3.87	83.47	-10.93	0.75	0.94	1.01	-34.19	5.12
15	12.31		-5.07	0.64	-95.28	-5.19	1.23	-33.92	-2.32	1.53	-4.19	89.88	-10.02	0.64	1.23	0.52	-34.31	5.12
16	12.32	25.29	-0.25	1.22	-76.34	-4.91	1.19	-33.88	-1.52	2.30	-3.73	72.37	-12.19	1.22	1.19	0.90	-34.22	5.11
17	12.33	25.30	0.85	1.41	-70.40	-4.07	1.35	-33.69	-1.37	2.65	-3.53	67.04	-12.27	1.41	1.35	1.65	-33.90	5.09
23	12.34	25.31	-1.68	1.07	-81.20	-5.17	1.01	-33.73	-1.86	2.01	-3.94	76.58	-11.50	1.07	1.01	0.64	-34.12	5.09
24	12.35	25.32	-2.04	2.65	-82.82	-5.22	1.27	-33.82	-1.81	2.17	-4.14	78.26	-11.24	2.65	1.27	0.52	-34.22	5.10
25	12.36	25.33	-1.64	-0.39	-80.99	-4.38	0.98	-34.08	-2.15	2.33	-3.47	76.87	-11.49	-0.39	0.98	1.43	-34.33	5.14
30	12.37	25.34	-6.07	-0.59	-19.14	-1.71	0.98	-11.09	-7.23	-2.95	-7.30	4.47	4.42	-0.59	0.98	4.07	-10.46	1.68
	12.38	25.35	-5.74	-0.57	-32.25	-1.86	1.00	-18.55	-7.58	-3.13	-7.37	15.15	-2.11	-0.57	1.00	7.65	-17.00	2.78
	12.39	25.36	-5.30	-0.49	-45.00	-1.31	0.64	-26.85	-7.67	-3.20	-7.08	26.09	-8.89	-0.49	0.64	12.25	-23.93	4.06
	12.40	25.37	-5.11	-0.44	-50.05	-1.19	1.62	-31.25	-6.69	-3.11	-6.69	31.66	-12.28	-0.44	1.62	14.52	-27.69	4.70

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
35	12.42	26.1	-5.37	-0.82	3.19	0.80	0.90	-3.68	0.30	2.61	0.81	2.33	4.86	-0.82	0.90	2.01	-3.19	0.56
	12.43	26.2	-5.14	-0.55	-18.85	1.13	1.26	-9.37	-1.59	0.98	-0.48	18.46	-1.22	-0.55	1.26	4.26	-8.42	1.42
	12.44	26.3	-4.89	-0.22	-38.53	1.28	1.06	-15.86	-3.02	-0.15	-1.43	33.57	-6.91	-0.22	1.06	6.59	-14.49	2.40
	12.45	26.4	-4.35	0.24	-59.54	1.38	0.99	-23.97	-3.98	-1.07	-2.22	50.66	-13.56	0.24	0.99	9.39	-22.10	3.63
	12.46	26.5	-3.91	0.70	-76.69	1.65	0.79	-31.98	-4.88	-1.82	-2.78	64.54	-19.14	0.70	0.79	12.41	-29.52	4.81
		26.6																
36	12.47	26.7	-3.60	-0.07	-9.60	0.80	0.45	-1.86	-4.58	-0.88	-2.49	3.23	2.29	-0.07	0.45	1.62	-1.21	0.29
	12.48	26.8	-3.37	-0.08	-29.95	0.88	0.41	-10.86	-5.49	-1.73	-3.18	18.62	-6.82	-0.08	0.41	6.18	-8.98	1.65
	12.49	26.9																
	12.50	26.10	-2.79	0.18	-49.10	0.92	0.13	-20.82	-6.32	-2.43	-3.72	33.18	-15.78	0.18	0.13	11.15	-17.61	3.14
	12.51	26.11	-2.19	0.31	-67.28	1.15	-0.11	-31.58	-7.06	-2.99	-4.16	47.11	-24.51	0.31	-0.11	16.71	-26.81	4.77
	12.52	26.12	-1.85	0.53	-80.67	1.36	0.05	-40.35	-7.30	-3.35	-4.57	57.74	-30.87	0.53	0.05	21.21	-34.35	6.07
37	12.53	26.13	-2.43	0.54	-56.65	0.84	1.95	-26.77	-4.64	-2.96	-4.07	40.22	-20.30	0.54	1.95	14.06	-22.80	4.04
38	12.54	26.14	-3.00	0.46	-68.49	0.72	1.66	-33.26	-5.53	-3.27	-4.56	49.35	-24.78	0.46	1.66	17.14	-28.51	5.03
39	12.55	26.15	-3.71	0.31	-80.54	0.75	1.44	-39.99	-6.06	-3.49	-4.78	59.36	-29.57	0.31	1.44	20.45	-34.37	6.05
40	12.56	26.16	-2.25	0.57	-44.92	0.80	2.26	-20.49	-4.20	-2.88	-3.89	30.58	-14.90	0.57	2.26	10.87	-17.38	3.09
41	12.57	26.17	-2.30	0.54	-31.83	0.37	2.16	-13.76	-3.76	-2.66	-3.66	20.01	-8.85	0.54	2.16	7.18	-11.74	2.08
42	12.58	26.18																
	12.59	26.19																
	12.60	26.20	-2.60	0.50	-55.86	0.81	1.90	-26.35	-4.74	-3.22	-4.22	39.19	-19.48	0.50	1.90	13.82	-22.46	3.98
43	12.61	26.21	-3.76	0.16	-60.58	0.84	1.87	-28.44	-5.02	-3.27	-4.49	43.36	-20.46	0.16	1.87	14.85	-24.28	4.28
44	12.62	26.22	-4.60	-0.14	-63.44	0.52	1.82	-29.68	-5.04	-3.18	-4.35	46.40	-21.36	-0.14	1.82	15.24	-25.47	4.48
45	12.63	26.23	-1.45	0.89	-53.39	1.07	2.00	-25.51	-5.12	-3.38	-4.21	35.99	-19.01	0.89	2.00	13.64	-21.58	3.85
47	12.64	26.24	-2.53	0.57	-55.84	0.49	1.86	-26.44	-4.86	-3.35	-4.21	38.91	-19.40	0.57	1.86	13.57	-22.69	3.99
48	12.65	26.25	-2.81	1.58	-56.14	0.59	1.75	-26.22	-4.59	-3.36	-4.23	39.54	-19.44	1.58	1.75	13.56	-22.45	3.94
49	12.66	26.26	-2.18	-0.55	-54.48	0.70	1.78	-25.94	-5.08	-3.39	-4.15	37.40	-18.92	-0.55	1.78	13.50	-22.16	3.92
51	12.68	27.1	-1.04	-0.06	-14.50	0.92	-0.15	-7.15	-4.20	-1.50	0.10	8.24	-3.52	-0.06	-0.15	4.35	-5.75	1.07
	12.69	27.2	-0.86	0.18	-33.50	1.06	-0.14	-12.36	-4.99	-2.23	-0.56	22.75	-12.05	0.18	-0.14	7.06	-10.20	1.87
	12.70	27.3	-0.69	0.50	-54.22	0.96	-0.16	-19.38	-5.48	-2.88	-1.02	39.29	-21.61	0.50	-0.16	10.43	-16.36	2.93
	12.71	27.4	-0.37	0.87	-72.76	1.04	-0.38	-26.96	-5.90	-3.41	-1.41	54.15	-30.29	0.87	-0.38	14.20	-22.94	4.07
	12.72	27.5	-0.16	1.44	-92.16	1.20	-0.42	-35.97	-6.25	-3.88	-1.73	70.01	-39.33	1.44	-0.42	18.73	-30.73	5.43
	12.73	27.6	0.00	1.98	-106.80	1.09	0.96	-44.99	-4.64	-4.28	-2.11	83.51	-46.97	1.98	0.96	23.00	-38.67	6.78
	12.74	27.7	0.75	2.97	-123.10	1.29	1.46	-54.90	-4.61	-4.49	-2.51	96.95	-55.09	2.97	1.46	27.92	-47.28	8.28
	12.75	27.8	1.00	3.13	-133.20	1.25	1.35	-61.57	-5.02	-4.09	-2.64	105.60	-60.03	3.13	1.35	31.09	-53.16	9.30
50	12.76	27.9	0.02	2.31	-83.36	-0.75	-0.27	-22.46	-2.34	0.55	-0.32	80.16	-13.32	2.31	-0.27	2.94	-22.28	3.40
	12.77	27.10	0.22	3.11	-101.90	0.06	-0.17	-28.08	-3.68	-0.73	-0.88	95.30	-15.70	3.11	-0.17	4.56	-27.71	4.24
	12.78	27.11	0.37	3.63	-114.30	0.43	-0.17	-32.49	-4.52	-1.49	-1.31	105.60	-17.28	3.63	-0.17	5.56	-32.01	4.91
52	12.79	27.12	0.25	2.81	-97.44	-0.25	-0.23	-26.54	-3.34	-0.39	-0.70	91.77	-15.12	2.81	-0.23	4.00	-26.23	4.00
53	12.80	27.13	-0.69	2.89	-107.40	0.17	-0.12	-29.23	-4.15	-1.17	-1.17	99.74	-15.32	2.89	-0.12	4.81	-28.83	4.40
54	12.81	27.14	-1.76	2.90	-117.70	0.57	-0.07	-32.42	-4.84	-1.83	-1.80	108.20	-15.43	2.90	-0.07	5.65	-31.93	4.89
		27.15																

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
55	12.82	27.16	0.97	2.63	-87.42	-0.54	-0.24	-24.19	-2.80	0.22	-0.60	83.00	-14.51	2.63	-0.24	3.36	-23.96	3.65
57	12.83	27.17	0.14	2.79	-97.86	0.05	-0.18	-26.76	-3.40	-0.50	-0.82	91.93	-14.98	2.79	-0.18	4.31	-26.41	4.04
58	12.84	27.18	-1.63	2.64	-100.70	0.04	-0.08	-26.66	-3.90	-0.87	-1.24	93.72	-13.40	2.64	-0.08	4.27	-26.31	4.03
		27.19																
59	12.85	27.20	-3.46	2.37	-103.20	0.03	-0.13	-26.31	-3.87	-0.99	-1.19	96.50	-11.93	2.37	-0.13	4.18	-25.98	3.98
60	12.86	27.21	1.80	2.98	-95.53	0.33	-0.20	-27.15	-3.38	-0.41	-0.97	89.32	-16.24	2.98	-0.20	4.66	-26.75	4.10
62	12.87	27.22																
	12.88	27.23	-0.02	2.80	-98.81	0.28	-0.21	-26.82	-3.49	-0.54	-0.71	92.88	-14.91	2.80	-0.21	4.53	-26.44	4.05
63	12.89	27.24	-0.10	4.44	-98.94	0.28	-0.22	-26.98	-3.23	-0.53	-0.67	93.33	-14.88	4.44	-0.22	4.55	-26.59	4.07
64	12.90	27.25	0.14	1.28	-97.40	0.13	-0.17	-26.68	-3.56	-0.64	-0.41	91.58	-14.87	1.28	-0.17	4.36	-26.32	4.02
66	13.1	28.1	2.67	-21.19	-14.15	0.39	-0.12	-14.23	-4.44	-3.89	-4.74	-0.40	-2.85	-21.19	-0.12	7.44	-12.13	2.14
	13.3	28.2	-1.56	0.21	-47.54	0.01	1.94	-22.86	-4.16	-4.35	-5.38	30.01	-15.30	0.21	1.94	11.32	-19.85	3.45
	13.4	28.3	-0.98	0.65	-76.97	-0.25	2.42	-34.12	-3.67	-4.38	-5.10	56.04	-30.54	0.65	2.42	16.56	-29.83	5.16
	13.5	28.4	-0.03	1.09	-101.50	-0.37	2.13	-46.30	-2.84	-2.95	-4.13	79.89	-44.76	1.09	2.13	22.32	-40.56	6.97
	13.6	28.5	0.60	1.40	-106.60	-0.53	1.94	-50.74	-2.22	-1.28	-3.48	86.61	-49.13	1.40	1.94	24.31	-44.54	7.65
65	13.7	28.6	-1.06	0.91	-31.74	-0.25	2.74	-18.90	1.15	0.07	-2.62	30.10	-4.01	0.91	2.74	2.90	-18.68	2.85
	13.8	28.7	-0.71	1.27	-59.56	-0.06	2.79	-21.73	-1.55	-1.12	-3.15	53.13	-8.14	1.27	2.79	3.51	-21.44	3.28
	13.9	28.8	-0.21	1.86	-89.69	-0.08	3.11	-27.77	-1.99	-1.70	-3.15	81.83	-12.98	1.86	3.11	4.34	-27.43	4.20
	13.10	28.9	0.45	2.50	-115.70	-0.39	2.78	-35.23	-1.91	-1.38	-3.07	107.90	-17.67	2.50	2.78	5.16	-34.86	5.30
	13.11	28.10	1.00	2.50	-131.40	-2.67	0.89	-41.63	-1.77	0.92	-3.24	125.60	-20.97	2.50	0.89	3.89	-41.53	6.28
67	13.12	28.11	0.40	1.13	-92.24	-4.16	1.16	-30.24	-1.12	3.83	-2.85	90.87	-15.04	1.13	1.16	0.70	-30.51	4.55
68	13.13	28.12	-0.02	1.08	-108.40	-3.99	0.76	-34.05	-1.71	2.64	-2.87	105.10	-16.98	1.08	0.76	1.49	-34.26	5.14
69	13.14	28.13	-0.70	0.96	-124.10	-3.43	0.86	-38.01	-2.15	1.86	-3.16	119.30	-18.15	0.96	0.86	2.55	-38.08	5.74
70	13.15	28.14	0.68	1.17	-77.59	-4.23	1.43	-27.21	-0.85	5.17	-2.59	78.18	-13.44	1.17	1.43	0.21	-27.53	4.11
71	13.16	28.15	0.82	1.11	-59.67	-3.55	1.86	-23.80	-0.50	4.58	-2.35	60.43	-10.93	1.11	1.86	0.42	-24.06	3.59
72	13.17	28.16	0.17	1.21	-94.00	-3.39	1.49	-29.91	-1.64	1.80	-2.87	90.10	-14.68	1.21	1.49	1.41	-30.07	4.51
73	13.18	28.17	-1.39	0.67	-96.59	-3.21	1.44	-29.66	-2.29	1.45	-2.98	91.81	-13.41	0.67	1.44	1.56	-29.79	4.47
74	13.19	28.18	-3.15	0.32	-102.00	-2.87	1.66	-29.84	-2.42	1.31	-3.29	96.81	-12.47	0.32	1.66	1.93	-29.91	4.50
75	13.20	28.19	1.69	1.61	-90.20	-3.26	1.73	-30.14	-1.31	2.19	-2.77	86.89	-15.83	1.61	1.73	1.61	-30.27	4.54
76	13.21	28.20	2.94	2.00	-87.35	-3.32	1.77	-30.38	-1.33	2.57	-2.43	84.58	-16.68	2.00	1.77	1.58	-30.52	4.59
77	13.22	28.21	0.31	1.23	-94.48	-3.46	1.55	-30.24	-1.92	1.67	-2.96	90.06	-14.88	1.23	1.55	1.41	-30.40	4.56
78	13.23	28.22	-0.07	2.87	-95.20	-3.80	1.84	-30.13	-1.76	1.87	-2.99	91.15	-14.58	2.87	1.84	1.03	-30.36	4.54
79	13.24	28.23	0.64	-0.23	-93.28	-3.51	1.54	-30.15	-2.03	1.69	-2.46	89.22	-15.08	-0.23	1.54	1.35	-30.32	4.57
80	13.25	28.24	-1.04	2.13	-103.60	-2.04	1.77	-26.15	-1.32	2.55	-3.22	101.60	1.21	2.13	1.77	-2.09	-26.15	3.95
81	13.26	28.25	-1.07	2.52	-117.90	-1.87	1.20	-29.35	-1.61	1.79	-3.18	114.90	1.34	2.52	1.20	-1.94	-29.35	4.44
82	13.27	28.26	-0.69	0.45	-91.43	-1.09	-0.61	-29.70	-3.30	-0.86	-4.25	83.02	0.99	0.45	-0.61	-1.20	-29.69	4.49
80A	13.29	29.1	-3.59	-0.14	-17.47	1.33	0.23	-0.89	-5.23	-2.54	-3.71	6.11	-3.37	-0.14	0.23	1.44	0.71	0.14
	13.30	29.2	-3.46	-0.14	-22.64	1.24	0.15	-4.50	-5.81	-2.78	-3.91	8.08	-7.04	-0.14	0.15	4.52	-1.18	0.68
	13.31	29.3	-3.30	-0.10	-28.04	1.17	0.22	-8.18	-6.37	-2.92	-4.12	10.19	-11.00	-0.10	0.22	7.66	-3.09	1.24
	13.32	29.4	-3.13	-0.28	-33.90	1.14	0.17	-12.52	-6.79	-3.08	-4.40	12.55	-15.42	-0.28	0.17	11.40	-5.29	1.89
	13.33	29.5	-3.00	-0.25	-38.58	1.13	0.15	-16.08	-7.25	-3.21	-4.57	14.41	-18.87	-0.25	0.15	14.47	-7.08	2.43

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
		29.6																
81A	13.34	29.7	-1.07	0.35	-15.63	1.26	0.00	2.59	-6.45	-2.83	-4.18	1.74	-1.68	0.35	0.00	-2.01	2.06	-0.39
	13.35	29.8	-0.93	0.32	-21.11	1.25	0.01	-1.39	-7.00	-3.37	-4.36	3.05	-5.69	0.32	0.01	1.73	0.70	0.21
	13.36	29.9	-1.14	0.20	-27.41	1.06	-0.01	-6.08	-7.46	-3.82	-4.71	4.97	-10.35	0.20	-0.01	6.08	-1.08	0.92
	13.37	29.10	-1.06	0.16	-33.20	0.97	0.06	-10.87	-7.80	-3.60	-4.97	6.75	-15.46	0.16	0.06	10.55	-2.80	1.64
	13.38	29.11	-1.02	0.14	-38.79	0.94	0.06	-15.29	-8.10	-3.74	-5.17	8.40	-20.12	0.14	0.06	14.69	-4.35	2.31
	13.39	29.12	-0.84	0.17	-44.15	0.95	0.02	-19.85	-8.43	-3.96	-5.40	9.81	-24.48	0.17	0.02	18.97	-5.91	2.98
	13.40	29.13	-0.75	-0.04	-49.18	0.93	0.03	-24.53	-8.74	-4.24	-5.36	11.28	-28.71	-0.04	0.03	23.36	-7.54	3.70
	13.41	29.14	-0.55	-0.03	-54.69	0.91	0.04	-29.89	-8.82	-4.48	-5.46	12.86	-33.55	-0.03	0.04	28.39	-9.42	4.51
	13.42	29.15	0.05	0.23	-60.50	0.97	-0.09	-35.65	-8.94	-4.66	-5.46	14.20	-38.93	0.23	-0.09	33.81	-11.35	5.37
81B	13.43	29.16	2.72	-2.54	-33.88	0.20	-0.04	1.40	-12.34	-7.71	-10.44	-2.72	-3.39	-2.54	-0.04	-1.40	0.20	-0.21
	13.44	29.17	2.40	-2.12	-41.60	0.16	0.06	-10.32	-12.20	-8.52	-10.56	-2.39	-10.31	-2.12	0.06	10.32	0.15	1.55
	13.45	29.18	1.75	-2.20	-55.95	0.17	0.08	-33.54	-11.92	-9.37	-10.61	-1.72	-24.05	-2.20	0.08	33.54	0.13	5.05
	13.46	29.19	1.70	-1.78	-70.88	0.14	0.16	-62.40	-11.01	-9.17	-10.46	-1.62	-40.24	-1.78	0.16	62.40	0.01	9.41
	13.47	29.20	1.07	-1.94	-77.08	0.21	0.25	-77.34	-10.09	-8.58	-10.32	-0.93	-48.09	-1.94	0.25	77.34	-0.01	11.66
	13.48	29.21	1.33	-1.66	-82.43	0.22	0.21	-89.10	-9.89	-8.56	-10.35	-1.14	-53.63	-1.66	0.21	89.10	-0.10	13.42
87	13.49	29.22	2.15	-2.12	-40.63	0.23	0.26	-22.91	-8.46	-5.94	-11.02	-2.11	-15.21	-2.12	0.26	22.91	0.18	3.46
88	13.50	29.23	-0.80	-3.82	-40.81	0.24	0.20	-22.83	-8.34	-6.03	-11.07	0.84	-15.36	-3.82	0.20	22.83	0.19	3.44
89	13.51	29.24	-3.07	-5.54	-41.95	0.26	0.20	-23.59	-8.37	-6.64	-11.07	3.12	-15.85	-5.54	0.20	23.59	0.19	3.55
90	13.52	29.25	4.44	-0.34	-40.73	0.32	0.28	-23.37	-8.50	-6.18	-10.92	-4.40	-15.15	-0.34	0.28	23.37	0.27	3.53
91	13.53	29.26	6.26	1.59	-41.87	0.27	0.13	-23.84	-9.32	-6.59	-10.72	-6.23	-15.25	1.59	0.13	23.84	0.23	3.59
92	13.54	29.27	2.51	-1.97	-41.44	0.25	0.23	-22.42	-9.61	-6.74	-11.00	-2.47	-14.10	-1.97	0.23	22.42	0.20	3.38
93	13.55	29.28	0.36	0.28	-41.78	0.30	0.27	-22.92	-9.71	-6.78	-11.28	-0.33	-14.01	0.28	0.27	22.92	0.24	3.45
94	13.56	29.29	4.05	-4.35	-41.73	0.28	0.24	-23.06	-9.45	-6.77	-11.17	-4.01	-14.35	-4.35	0.24	23.07	0.23	3.48
		30.1																
95	13.59	30.2	0.57	-4.51	-58.76	0.08	0.38	-19.16	-17.86	-16.91	-16.48	-0.54	-7.51	-4.51	0.38	19.16	-0.01	2.90
	13.60	30.3	0.62	-3.89	-68.12	0.03	0.41	-46.47	-17.56	-16.88	-16.51	-0.58	-17.16	-3.89	0.41	46.47	-0.08	7.01
	13.61	30.4	1.18	-4.04	-60.90	0.04	0.44	-32.83	-17.06	-16.40	-16.91	-1.16	-10.53	-4.04	0.44	32.83	-0.04	4.95
101	13.62	30.5	1.12	-4.22	-53.10	0.13	0.41	-17.47	-16.33	-16.01	-17.32	-1.11	-3.44	-4.22	0.41	17.47	0.09	2.64
95A	13.63	30.6	1.13	-3.68	-65.50	0.04	0.42	-43.90	-17.31	-17.42	-17.20	-1.10	-13.58	-3.68	0.42	43.90	-0.04	6.63
101A	13.64	30.7	2.14	-3.96	-52.29	0.16	0.41	-17.14	-16.00	-16.15	-17.56	-2.14	-2.59	-3.96	0.41	17.14	0.13	2.58
102	13.65	30.8	-2.94	-8.01	-52.61	0.15	0.52	-17.11	-16.20	-16.53	-17.77	2.94	-2.11	-8.01	0.52	17.11	0.13	2.58
103	13.66	30.9	-7.29	-12.07	-54.49	0.00	0.64	-19.68	-16.11	-17.65	-17.94	7.30	-2.77	-12.07	0.64	19.68	-0.06	2.97
104	13.67	30.10	6.74	0.39	-52.52	0.28	0.21	-19.04	-15.76	-16.76	-17.68	-6.74	-2.32	0.39	0.21	19.04	0.27	2.86
106	13.68	30.11	0.91	-3.99	-52.38	0.06	0.38	-18.03	-15.87	-16.86	-17.75	-0.90	-1.92	-3.99	0.38	18.03	0.00	2.72
107	13.69	30.12	-2.66	0.51	-52.89	0.07	0.28	-18.61	-15.85	-16.93	-17.86	2.66	-2.25	0.51	0.28	18.61	0.07	2.81
108	13.70	30.13	5.63	-7.67	-51.99	0.30	0.33	-18.38	-15.11	-16.58	-17.80	-5.63	-2.52	-7.67	0.33	18.38	0.27	2.78
109	13.72	31.1	2.31	-2.80	-45.86	0.14	0.04	-9.30	-13.90	-9.19	-8.99	-2.32	-13.78	-2.80	0.04	9.30	0.14	1.41
110	13.73	31.2	-1.08	-4.47	-45.60	0.19	-0.02	-10.19	-14.24	-9.01	-9.37	1.42	-12.94	-4.47	-0.02	10.19	-0.08	1.54
111	13.74	31.3	-3.77	-6.17	-44.19	0.26	-0.06	-10.09	-14.03	-8.66	-9.34	4.41	-11.95	-6.17	-0.06	10.09	-0.28	1.52
112	13.75	31.4	6.30	-0.68	-44.95	0.08	0.36	-9.89	-13.79	-9.09	-8.92	-6.65	-12.99	-0.68	0.36	9.88	0.34	1.50

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
113	13.76	31.5	8.99	1.39	-45.04	0.27	0.28	-12.22	-12.94	-8.61	-8.84	-9.75	-14.16	1.39	0.28	12.19	0.92	1.84
114	13.77	31.6	-1.47	-4.59	-70.61	0.03	0.45	-51.54	-17.05	-16.49	-16.80	1.52	-20.27	-4.59	0.45	51.54	-0.09	7.75
115	13.78	31.7	-7.04	-8.31	-70.84	0.08	0.55	-52.79	-16.86	-17.02	-17.74	7.44	-19.05	-8.31	0.55	52.78	-1.03	7.96
116	13.79	31.8	-8.63	-9.38	-70.95	-0.05	0.65	-52.47	-16.75	-17.43	-17.92	9.13	-18.60	-9.38	0.65	52.45	-1.46	7.91
117	13.80	31.9	5.88	-0.45	-69.77	0.14	0.37	-52.50	-16.42	-16.72	-17.68	-6.17	-18.86	-0.45	0.37	52.49	0.95	7.92
118	13.81	31.10	11.49	3.55	-72.30	0.25	0.20	-57.84	-16.33	-17.40	-17.67	-12.18	-20.51	3.55	0.20	57.80	2.18	8.71
128	13.82	31.11	-2.02	-4.72	-69.08	0.07	0.42	-52.73	-16.90	-17.13	-17.57	2.08	-17.48	-4.72	0.42	52.73	-0.11	7.96
129	13.83	31.12	-6.60	-7.74	-69.33	-0.06	0.49	-52.87	-16.42	-17.63	-17.88	6.97	-17.26	-7.74	0.49	52.85	-1.18	7.96
130	13.84	31.13	-9.35	-9.76	-69.28	-0.06	0.54	-53.63	-16.05	-17.77	-17.63	9.91	-17.52	-9.76	0.54	53.60	-1.77	8.07
123	13.85		-1.75	-4.27	-71.87	0.08	0.36	-61.77	-16.34	-17.40	-17.23	1.78	-20.90	-4.27	0.36	61.77	-0.02	9.32
122	13.86	31.14	-1.54	-3.99	-64.12	0.06	0.37	-58.43	-13.11	-14.65	-15.69	1.58	-20.67	-3.99	0.37	58.43	-0.05	8.81
124	13.87	31.15	2.29	-3.24	-58.25	0.13	0.22	-53.88	-11.23	-12.90	-13.52	-2.27	-20.59	-3.24	0.22	53.88	0.08	8.14
122A	13.88	31.16	3.66	-3.86	-44.13	0.17	0.14	-16.70	-12.54	-13.88	-15.00	-3.66	-2.71	-3.86	0.14	16.70	0.18	2.52
122B	13.89		0.36	-4.82	-67.27	0.12	0.24	-58.72	-14.53	-16.08	-15.98	-0.34	-20.68	-4.82	0.24	58.72	0.07	8.84
124A	13.90	31.17	-0.86	-4.43	-78.03	0.12	0.26	-87.38	-13.30	-15.02	-14.72	0.94	-34.99	-4.43	0.26	87.38	-0.08	13.19
125	13.91	31.18	2.34	-2.96	-36.34	0.35	-0.01	-29.79	-7.06	-8.72	-6.23	-2.34	-14.34	-2.96	-0.01	29.79	0.34	4.50
126	13.92		-0.45	-4.05	-38.16	0.37	0.05	-29.49	-7.76	-8.84	-7.07	0.72	-14.48	-4.05	0.05	29.50	-0.17	4.45
127	13.93	31.19	-2.48	-4.97	-39.03	0.51	0.05	-29.55	-7.70	-9.33	-7.31	3.02	-14.58	-4.97	0.05	29.55	-0.58	4.45
119	13.94	31.20	1.78	-2.53	-35.92	0.32	0.00	-26.46	-6.91	-8.03	-5.72	-1.73	-15.26	-2.53	0.00	26.46	0.23	3.99
120	13.95	31.21	3.20	-3.06	-16.65	0.33	-0.09	5.77	-7.71	-7.62	-6.51	-3.21	5.18	-3.06	-0.09	-5.77	0.34	-0.87
121	13.96	31.22	0.92	-1.97	-55.36	0.37	0.01	-53.28	-6.23	-7.91	-4.75	-0.87	-36.48	-1.97	0.01	53.28	0.29	8.04
131	14.1	32.1	-0.65	0.12	-39.76	0.51	-0.08	-15.79	-10.51	-4.49	-4.44	7.58	-18.87	0.12	-0.08	15.01	-4.94	2.38
132	14.2		-1.01	-0.08	-39.80	0.48	0.03	-16.14	-10.12	-4.41	-4.36	8.39	-19.18	-0.08	0.03	15.25	-5.30	2.43
133	14.3	32.2	-1.96	-0.40	-40.44	0.51	0.21	-17.20	-9.61	-4.26	-4.42	10.09	-19.81	-0.40	0.21	16.14	-5.95	2.60
133A	14.4	32.3	-2.63	-0.88	-42.18	0.46	0.31	-18.59	-9.34	-4.32	-4.42	12.56	-20.74	-0.88	0.31	17.05	-7.43	2.80
134	14.5	32.4	0.50	0.32	-38.02	0.56	-0.04	-14.23	-10.06	-5.19	-4.43	5.03	-17.64	0.32	-0.04	13.74	-3.74	2.17
135	14.6	32.5	1.20	0.77	-36.74	0.51	-0.13	-12.91	-10.56	-5.44	-4.46	3.04	-16.04	0.77	-0.13	12.61	-2.83	1.95
139	14.7	32.6	-0.50	0.19	-38.81	0.45	0.12	-15.32	-10.39	-4.95	-4.12	7.06	-18.02	0.19	0.12	14.55	-4.80	2.31
140	14.8	32.7	-2.34	-0.32	-40.90	0.43	0.19	-17.32	-10.48	-4.85	-4.35	10.42	-18.64	-0.32	0.19	16.12	-6.35	2.61
141	14.9	32.8	-3.53	-0.94	-42.59	0.29	0.25	-19.13	-10.25	-4.45	-4.28	13.53	-19.67	-0.94	0.25	17.32	-8.12	2.88
142	14.10	32.9	1.11	0.30	-37.93	0.49	-0.02	-14.23	-10.82	-5.24	-4.43	3.98	-17.02	0.30	-0.02	13.76	-3.65	2.15
143	14.11	32.10	2.32	0.67	-36.85	0.56	-0.09	-13.19	-10.74	-5.40	-4.36	1.68	-16.43	0.67	-0.09	12.93	-2.63	1.99
136	14.12	32.11	-0.51	0.18	-38.94	0.52	0.19	-15.46	-10.43	-5.01	-3.92	7.15	-18.24	0.18	0.19	14.71	-4.78	2.34
137	14.13	32.12	-0.87	0.55	-24.04	0.83	0.24	-1.67	-10.85	-5.03	-4.15	2.18	-3.47	0.55	0.24	1.85	0.21	0.26
138	14.14	32.13	-0.05	-0.04	-52.94	0.38	0.14	-26.68	-10.15	-5.05	-3.85	11.64	-31.82	-0.04	0.14	25.20	-8.77	4.03
		33.1																
		33.2																
		33.3																
	15.1	34.1																
	15.2	34.2																
	15.3	34.3	-1.89	-0.05	-3.85	-0.11	0.18	-15.48	0.22	-4.14	-3.07	1.67	3.26	-0.05	0.18	15.44	-1.15	2.37

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
	15.4	34.4	-1.63	-0.51	-38.58	0.07	-0.13	-16.75	-3.52	-5.47	-4.13	3.36	-25.30	-0.51	-0.13	16.72	-1.07	2.53
	15.5	34.5	-1.43	-0.51	-46.89	-0.12	-0.21	-17.43	-4.88	-5.92	-4.67	3.57	-31.26	-0.51	-0.21	17.38	-1.31	2.63
	15.6	34.6	-1.28	-0.50	-55.35	-0.07	-0.41	-18.45	-5.28	-6.33	-5.10	3.91	-38.46	-0.50	-0.41	18.40	-1.33	2.79
	15.7	34.7	-1.20	-0.52	-64.31	-0.16	-0.46	-20.30	-5.87	-6.77	-5.63	4.34	-45.86	-0.52	-0.46	20.24	-1.55	3.06
	15.8	34.8	-1.54	-0.63	-74.02	-0.18	-0.40	-23.01	-6.23	-7.27	-6.15	5.27	-54.14	-0.63	-0.40	22.95	-1.77	3.48
	15.9	34.9	-1.61	-0.66	-83.59	-0.19	-0.46	-25.92	-6.67	-7.60	-6.61	5.92	-62.44	-0.66	-0.46	25.84	-1.98	3.90
	15.10	34.10	-1.39	-0.62	-92.06	-0.48	-0.54	-29.22	-6.34	-7.73	-7.04	6.28	-70.68	-0.62	-0.54	29.12	-2.50	4.39
	15.11	34.11	-1.41	-0.62	-103.70	-0.54	-0.58	-33.50	-6.57	-8.08	-7.66	7.05	-81.08	-0.62	-0.58	33.39	-2.87	5.05
	15.12	34.12	-0.71	-0.29	-115.60	-0.82	-0.67	-38.54	-6.38	-8.34	-7.96	7.17	-92.65	-0.29	-0.67	38.39	-3.50	5.82
	15.13	34.13	-0.27	-0.12	-127.60	-1.04	-0.87	-44.03	-6.12	-8.75	-8.47	7.52	-104.00	-0.12	-0.87	43.85	-4.10	6.65
	15.14	34.14	-0.01	-0.40	-138.50	-0.80	-0.95	-49.62	-5.64	-7.90	-9.02	8.10	-115.70	-0.40	-0.95	49.44	-4.26	7.47
	15.15	34.15	-0.44	-0.91	-151.80	-0.78	-1.00	-56.85	-6.03	-7.91	-8.32	9.50	-129.20	-0.91	-1.00	56.66	-4.75	8.57
	15.16	34.16	-0.03	-0.79	-163.00	-0.72	-1.01	-63.78	-5.86	-7.60	-8.16	9.93	-141.00	-0.79	-1.01	63.57	-5.18	9.62
	15.17	34.17	0.40	-0.52	-175.40	-0.57	-0.97	-71.86	-5.71	-7.19	-7.95	10.47	-154.20	-0.52	-0.97	71.64	-5.63	10.84
	15.18	34.18	0.93	-0.56	-185.60	-0.52	-1.10	-79.46	-5.26	-6.52	-7.51	10.84	-165.90	-0.56	-1.10	79.22	-6.14	11.97
	15.19	34.19	1.23	-0.83	-198.00	-0.42	-0.99	-88.85	-4.83	-5.93	-6.95	11.56	-179.90	-0.83	-0.99	88.60	-6.72	13.41
	15.20	34.20	-1.55	-0.54	-22.09	-0.73	-0.52	-17.13	3.28	1.27	-4.08	3.11	-22.40	-0.54	-0.52	17.04	-1.92	2.58
	15.21	34.21	-1.52	-0.50	-17.58	-0.80	-0.45	-17.18	3.61	2.17	-3.99	2.86	-19.21	-0.50	-0.45	17.08	-1.99	2.59
	15.23	35.1	-1.66	-0.49	-12.28	-0.88	-0.14	-17.52	3.75	3.34	-3.92	2.73	-15.30	-0.49	-0.14	17.42	-2.09	2.64
	15.24	35.2	-1.65	-0.43	-6.25	-0.95	0.18	-17.83	3.97	4.56	-3.71	2.41	-10.93	-0.43	0.18	17.73	-2.18	2.69
	15.25	35.3	-1.61	-0.25	-4.68	0.58	-0.15	-7.15	-0.45	-0.03	0.82	1.96	-4.90	-0.25	-0.15	7.17	0.08	1.09
	15.26	35.4	-1.62	-0.33	-10.64	0.65	-0.22	-6.75	-1.05	-0.51	0.28	2.28	-9.23	-0.33	-0.22	6.78	0.17	1.03
	15.27	35.5	-1.57	-0.28	-16.56	0.56	-0.30	-6.61	-1.66	-1.07	-0.34	2.50	-13.35	-0.28	-0.30	6.64	0.10	0.99
	15.28	35.6	-1.43	-0.26	-22.01	0.58	-0.41	-6.92	-2.32	-1.68	-1.00	2.61	-16.86	-0.26	-0.41	6.94	0.10	1.04
	15.29	35.7	-1.37	-0.38	-27.81	0.61	-0.47	-7.47	-2.84	-2.19	-1.51	2.86	-21.12	-0.38	-0.47	7.50	0.08	1.13
	15.30	35.8	-1.47	-0.57	-33.76	0.63	-0.40	-8.44	-3.36	-2.78	-2.00	3.28	-25.45	-0.57	-0.40	8.46	0.03	1.27
	15.31	35.9	-1.34	-0.51	-39.41	0.60	-0.41	-9.63	-3.86	-3.21	-2.38	3.34	-29.81	-0.51	-0.41	9.65	-0.05	1.45
	15.32	35.10	-1.59	-0.55	-45.32	0.60	-0.36	-11.00	-4.27	-3.65	-2.71	3.91	-34.50	-0.55	-0.36	11.01	-0.13	1.66
	15.33	35.11	-1.45	-0.51	-51.61	0.59	-0.40	-12.64	-4.58	-4.00	-3.03	4.14	-39.82	-0.51	-0.40	12.65	-0.26	1.90
	15.34	35.12	-1.40	-0.52	-58.68	0.61	-0.42	-14.58	-4.86	-4.30	-3.27	4.51	-46.05	-0.52	-0.42	14.59	-0.38	2.21
	15.35	35.13	-1.34	-0.48	-66.55	0.61	-0.45	-17.05	-5.15	-4.63	-3.52	4.94	-53.03	-0.48	-0.45	17.06	-0.55	2.59
	15.36	35.14	-1.37	-0.50	-73.56	0.62	-0.47	-19.70	-5.43	-4.95	-3.79	5.42	-59.16	-0.50	-0.47	19.69	-0.72	2.97
	15.37	35.15	-1.39	-0.55	-81.52	0.63	-0.45	-22.80	-5.74	-5.19	-3.95	5.95	-66.39	-0.55	-0.45	22.79	-0.93	3.43
	15.38	35.16	-1.08	-0.33	-89.80	0.63	-0.55	-26.15	-5.99	-5.60	-4.09	6.16	-73.87	-0.33	-0.55	26.14	-1.16	3.95
	15.39	35.17	-1.15	-0.29	-97.56	0.63	-0.60	-29.57	-6.22	-6.15	-4.32	6.71	-80.59	-0.29	-0.60	29.54	-1.40	4.46
	15.40	35.18	-1.15	-0.27	-105.70	0.59	-0.60	-33.35	-6.35	-6.68	-4.64	7.23	-87.79	-0.27	-0.60	33.31	-1.71	5.04
	15.41	35.19	-1.16	-0.25	-109.30	0.57	-0.57	-35.04	-6.35	-6.90	-4.75	7.48	-91.01	-0.25	-0.57	35.00	-1.85	5.28
	15.42	35.20	-1.17	-0.22	-113.60	0.57	-0.54	-37.23	-6.46	-7.10	-4.86	7.77	-94.84	-0.22	-0.54	37.18	-2.01	5.61
	15.43	35.21	-1.20	-0.19	-118.20	0.56	-0.53	-39.54	-6.62	-7.43	-5.05	8.08	-98.73	-0.19	-0.53	39.48	-2.19	5.95
	15.44	35.22	-1.20	-0.20	-121.30	0.57	-0.53	-41.30	-6.67	-7.65	-5.12	8.29	-101.60	-0.20	-0.53	41.24	-2.31	6.23
	15.45	35.23	-1.23	-0.20	-126.00	0.57	-0.52	-43.69	-6.79	-7.91	-5.27	8.61	-105.70	-0.20	-0.52	43.62	-2.47	6.59

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
	15.46	35.24	-1.82	-0.75	-131.20	0.69	-0.51	-46.13	-6.99	-8.23	-5.46	9.53	-110.20	-0.75	-0.51	46.06	-2.53	6.96
	15.47	35.25	-1.58	-0.63	-134.80	0.69	-0.50	-48.12	-7.06	-8.42	-5.61	9.50	-113.30	-0.63	-0.50	48.05	-2.67	7.27
	15.48	35.26	-1.56	-0.63	-138.30	0.72	-0.48	-50.21	-7.11	-8.64	-5.67	9.58	-116.50	-0.63	-0.48	50.14	-2.73	7.56
	15.49	35.27	-1.63	-0.72	-142.40	0.76	-0.48	-52.56	-7.24	-8.94	-5.99	10.07	-119.80	-0.72	-0.48	52.49	-2.93	7.92
		35.28																
	15.50	35.29	-1.66	-0.74	-147.60	0.86	-0.46	-57.57	-7.49	-6.69	-6.06	10.75	-127.00	-0.74	-0.46	57.49	-3.25	8.70
	15.51	35.30	-1.52	-0.78	-154.90	0.84	-0.43	-62.29	-7.59	-6.93	-6.22	10.62	-133.70	-0.78	-0.43	62.21	-3.39	9.39
	15.54	36.1	-0.70	-0.62	-161.60	0.91	-0.47	-67.30	-7.83	-7.11	-6.43	10.27	-139.80	-0.62	-0.47	67.20	-3.69	10.16
		36.2																
	15.55	37.1	-0.66	-0.48	-168.30	0.91	-0.37	-72.21	-8.01	-7.31	-6.60	10.74	-146.00	-0.48	-0.37	72.10	-4.06	10.91
	15.57	38.1	-0.79	-0.39	-107.00	0.72	-0.53	-34.16	-8.26	-3.63	-3.26	7.16	-91.54	-0.39	-0.53	34.13	-1.66	5.14
	15.58	38.2	0.32	-0.42	-190.60	-0.43	-0.94	-80.93	-5.20	-6.58	-7.49	12.55	-170.80	-0.42	-0.94	80.67	-6.50	12.18
	15.59	38.3	-1.49	0.02	5.27	0.07	0.52	-17.30	3.38	-1.03	-0.84	-3.77	1.47	0.02	0.52	-0.01	-17.31	2.61
	15.60	38.4	-1.21	-0.19	-0.10	0.42	0.43	-15.63	2.37	-1.43	-1.20	-0.16	1.21	-0.19	0.43	0.34	-15.63	2.36
	15.61	38.5	-0.81	-0.03	-13.81	0.09	0.70	-17.24	1.44	-1.93	-1.51	11.80	0.83	-0.03	0.70	0.06	-17.24	2.60
	15.62	38.6	-0.83	-0.10	-22.01	0.35	0.53	-17.47	0.21	-2.30	-2.02	17.90	0.88	-0.10	0.53	0.30	-17.47	2.64
	15.63	38.7	-0.66	-0.04	-33.99	0.16	0.17	-17.56	-1.90	-2.97	-2.64	26.48	0.76	-0.04	0.17	0.10	-17.56	2.66
	15.64	38.8	-0.77	-0.44	-40.90	0.18	-0.03	-18.06	-3.07	-3.37	-3.30	31.15	0.91	-0.44	-0.03	0.10	-18.06	2.73
	15.65	38.9	-0.70	-0.61	-49.93	0.16	-0.22	-19.02	-3.95	-3.74	-3.88	38.35	0.77	-0.61	-0.22	0.13	-19.02	2.86
	15.66	38.10	-0.67	-0.62	-59.68	0.13	-0.38	-20.88	-4.80	-4.16	-4.45	46.27	0.79	-0.62	-0.38	0.07	-20.88	3.16
	15.67	38.11	-0.64	-0.50	-68.96	0.15	-0.42	-23.20	-5.21	-4.46	-4.78	54.51	0.79	-0.50	-0.42	0.08	-23.20	3.49
	15.68	38.12	-0.54	-0.55	-78.84	0.07	-0.53	-26.28	-5.63	-4.83	-5.21	63.17	0.79	-0.55	-0.53	-0.03	-26.28	3.96
	15.69	38.13	-0.42	-0.69	-90.02	-0.30	-0.70	-30.40	-5.19	-5.04	-5.52	74.27	0.60	-0.69	-0.70	-0.37	-30.40	4.59
	15.70	38.14	-0.15	-0.52	-99.59	-0.51	-0.71	-34.51	-4.49	-5.14	-5.79	84.17	0.46	-0.52	-0.71	-0.64	-34.50	5.19
	15.71	38.15	-0.05	-0.56	-111.70	-0.46	-0.81	-39.85	-4.32	-5.39	-5.94	96.02	0.16	-0.56	-0.81	-0.50	-39.85	6.02
	15.72	38.16	0.01	-0.76	-124.40	-0.46	-0.88	-45.45	-4.08	-5.40	-5.97	109.00	0.25	-0.76	-0.88	-0.57	-45.45	6.87
	15.73	38.17	0.07	-0.67	-136.50	-0.48	-0.86	-51.64	-3.95	-5.56	-6.17	120.80	0.40	-0.67	-0.86	-0.68	-51.64	7.79
	15.74	38.18	0.38	-0.72	-148.90	-0.39	-0.80	-58.33	-3.83	-5.55	-6.13	133.40	0.33	-0.72	-0.80	-0.70	-58.33	8.78
	15.75	38.19	0.57	-0.66	-162.00	-0.27	-0.63	-65.98	-3.71	-5.61	-6.18	146.50	-0.43	-0.66	-0.63	-0.34	-65.97	9.96
	15.76	38.20	0.69	-0.77	-176.50	-0.11	-0.51	-74.50	-3.63	-5.60	-6.18	161.10	-0.16	-0.77	-0.51	-0.35	-74.50	11.25
	15.77	38.21	1.30	-0.61	-187.10	-0.09	-0.38	-82.31	-3.44	-5.38	-5.89	172.40	-0.89	-0.61	-0.38	-0.29	-82.31	12.43
	15.78	38.22	-0.30	-0.62	-109.60	-0.42	-0.31	-40.09	-2.13	-5.31	-5.89	96.29	0.36	-0.62	-0.31	-0.44	-40.09	6.05
	15.80	39.1	-1.35	-0.49	-3.66	0.40	0.77	-18.75	6.74	-2.24	-1.46	6.70	1.37	-0.49	0.77	0.36	-18.75	2.84
	15.81	39.2	-0.62	-0.86	-100.10	-0.26	-0.70	-34.44	-5.48	-5.88	-6.27	82.51	0.87	-0.86	-0.70	-0.36	-34.44	5.20
	15.82	39.3	-1.16	-0.03	-8.81	-0.03	0.64	-17.97	-0.12	-1.32	-1.37	6.01	1.16	-0.03	0.64	-0.05	-17.97	2.72
	15.83	39.4	-0.68	-0.08	-39.31	0.04	-0.28	-17.54	-2.77	-2.60	-2.84	31.11	0.72	-0.08	-0.28	0.02	-17.54	2.64
	15.84	39.5	-0.58	-0.42	-56.63	-0.20	-0.38	-19.89	-4.25	-3.39	-4.12	44.87	0.65	-0.42	-0.38	-0.23	-19.89	3.00
	15.85	39.6	-0.18	-0.33	-75.03	-0.44	-0.77	-24.75	-5.01	-4.02	-4.90	61.10	0.33	-0.33	-0.77	-0.50	-24.75	3.73
	15.86	39.7	0.22	-0.65	-103.10	-0.74	-1.12	-34.61	-5.55	-4.58	-5.72	87.23	-0.01	-0.65	-1.12	-0.83	-34.61	5.23
	15.87	39.8	0.02	-0.70	-120.90	-0.89	-1.22	-42.57	-5.36	-4.80	-5.89	104.90	0.44	-0.70	-1.22	-1.07	-42.56	6.44
	15.88	39.9	0.45	-0.73	-144.30	-0.83	-1.34	-54.41	-5.21	-4.78	-5.99	128.40	-0.16	-0.73	-1.34	-0.95	-54.41	8.21

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
	15.89	39.10	1.21	-0.72	-169.70	-0.67	-1.16	-69.35	-4.73	-4.56	-5.85	154.60	-0.61	-0.72	-1.16	-0.94	-69.34	10.44
	15.91	40.1	1.68	-1.01	-195.80	-0.46	-0.96	-86.54	-4.45	-4.41	-5.54	181.40	-1.31	-1.01	-0.96	-0.64	-86.54	13.04
	15.92	40.2	-0.68	-0.91	-112.40	-0.67	-0.45	-40.00	-2.94	-4.44	-5.77	99.26	0.93	-0.91	-0.45	-0.77	-40.00	6.03
	16.1	41.1	0.93	-0.46	-178.20	-0.42	-1.13	-71.37	-6.42	-5.30	-6.18	160.30	0.34	-0.46	-1.13	-0.99	-71.37	10.99
	16.2	42.1	1.07	-0.80	-173.80	-0.41	-1.30	-69.95	-6.01	-5.16	-6.23	156.40	0.42	-0.80	-1.30	-1.07	-69.95	10.67
	16.3	42.2	-0.75	-0.24	-60.87	-0.34	-0.22	-20.79	-3.54	-3.28	-4.58	49.47	0.86	-0.24	-0.22	-0.39	-20.79	3.14
	16.4	42.3	-0.78	-0.09	-62.48	0.15	-0.58	-20.03	-4.89	-4.59	-4.81	48.18	0.90	-0.09	-0.58	0.11	-20.03	3.03
	16.5	42.4	-0.85	-0.12	-25.67	0.45	-0.61	-19.30	5.29	8.14	10.40	49.49	1.05	-0.12	-0.61	0.38	-19.31	2.91
	16.6	42.5	-0.79	-0.21	-25.57	0.53	-0.46	-17.48	5.89	8.97	8.43	48.86	1.00	-0.21	-0.46	0.46	-17.49	2.64
	16.7	42.6	-0.87	-0.20	-27.34	0.67	-0.29	-15.88	5.87	8.34	7.76	49.29	1.10	-0.20	-0.29	0.60	-15.88	2.40
	16.8	42.7	-0.71	-0.30	-57.81	0.71	-0.35	-21.47	1.20	3.01	3.03	65.05	1.04	-0.30	-0.35	0.61	-21.47	3.25
	16.9	42.8	-0.66	-0.31	-79.95	0.69	-0.48	-27.23	-1.55	-0.33	-0.08	78.00	1.07	-0.31	-0.48	0.54	-27.23	4.11
	16.10	42.9	-0.53	-0.45	-100.10	0.84	-0.57	-34.20	-3.59	-2.89	-1.28	92.36	1.07	-0.45	-0.57	0.64	-34.21	5.16
	16.11	42.10	-0.48	-0.40	-117.60	0.83	-0.45	-43.05	-4.06	-3.66	-1.74	108.10	0.58	-0.40	-0.45	0.79	-43.05	6.50
	16.12	42.11	-0.58	-0.53	-132.90	0.86	-0.33	-51.76	-4.66	-4.08	-2.12	122.00	0.93	-0.53	-0.33	0.71	-51.77	7.83
	16.13	42.12	-0.57	-0.69	-150.10	0.91	-0.30	-61.53	-5.77	-4.63	-2.97	136.70	1.21	-0.69	-0.30	0.62	-61.53	9.28
	16.14	42.13	-0.65	-0.65	-157.30	0.95	-0.22	-66.31	-6.16	-4.92	-3.29	142.90	1.48	-0.65	-0.22	0.56	-66.31	9.99
	16.15	42.14	-1.00	-0.57	-29.67	0.76	-0.21	-15.42	4.86	7.56	8.02	50.10	0.98	-0.57	-0.21	0.76	-15.42	2.33
	16.16	42.15	-0.83	-0.45	-49.13	0.75	-0.02	-13.88	-1.46	-0.62	1.04	48.09	0.90	-0.45	-0.02	0.73	-13.88	2.10
	16.17	42.16	-0.91	-0.35	-49.01	0.66	0.07	-14.02	-0.92	0.43	1.36	49.88	1.00	-0.35	0.07	0.64	-14.02	2.12
	16.18	42.17	-0.91	-0.34	-45.89	0.57	0.05	-14.77	1.27	1.40	2.76	51.32	1.01	-0.34	0.05	0.54	-14.77	2.23
	16.19	42.18	-0.91	-0.44	-60.67	0.57	0.05	-18.14	-1.66	-0.67	0.51	58.86	1.04	-0.44	0.05	0.53	-18.14	2.72
	16.20	42.19	-0.94	-0.54	-72.73	0.69	-0.04	-22.24	-3.79	-1.69	-0.62	66.62	1.11	-0.54	-0.04	0.63	-22.24	3.35
	16.21	42.20	-0.95	-0.55	-80.86	0.68	-0.04	-26.45	-4.23	-2.05	-0.95	73.63	1.15	-0.55	-0.04	0.61	-26.45	3.99
	16.22	42.21	-0.74	-0.66	-89.05	0.75	-0.05	-30.76	-4.50	-2.30	-1.24	81.00	0.99	-0.66	-0.05	0.66	-30.77	4.65
	16.23	42.22	-0.85	-0.83	-96.20	0.86	0.00	-35.14	-4.92	-2.59	-1.77	86.91	1.13	-0.83	0.00	0.75	-35.14	5.29
	16.24	42.23	-0.72	-0.85	-104.20	0.78	0.18	-41.05	-5.57	-3.21	-3.66	91.72	1.04	-0.85	0.18	0.64	-41.05	6.20
	16.25	42.24	0.15	-0.57	-111.40	0.56	0.22	-48.82	-6.72	-4.95	-5.19	94.55	0.23	-0.57	0.22	0.36	-48.83	7.37
	16.26	42.25	0.09	-0.48	-117.70	1.42	0.73	-56.99	-8.78	-5.91	-6.33	96.64	0.36	-0.48	0.73	1.15	-57.00	8.59
			0.03	-0.47	-124.90	0.92	0.65	-66.67	-10.71	-6.96	-7.72	99.55	0.66	-0.47	0.65	0.45	-66.67	10.06
			-9.35	-21.19	-198.00	-5.22	-1.34	-89.10	-17.86	-17.77	-17.94	-12.18	-179.90	-21.19	-1.34	-5.77	-86.54	-0.87
			11.49	4.44	5.27	1.65	4.39	5.77	6.74	8.97	10.40	181.40	9.60	4.44	4.39	89.10	2.18	13.42
49	12.67																	
64	12.91		2.03	0.26	-0.38	-0.17	0.77	-0.27	1.73	0.56	-1.42	-0.43	-2.35	0.26	0.77	0.05	-0.31	0.00
82	13.28		-0.08	-0.05	1.12	0.24	0.36	-0.10	0.19	1.14	0.15	0.35	-0.11	-0.05	0.36	0.26	0.03	0.00
94	13.57		1.40	-0.03	3.40	0.41	0.55	-0.02	0.53	2.01	-0.32	-1.18	-1.41	-0.03	0.55	0.41	-0.02	0.00
94	13.58		2.69	0.14	5.39	0.63	0.96	0.04	0.98	2.70	-0.25	-2.69	1.96	0.14	0.96	-0.03	0.63	0.00
108	13.71		2.68	0.14	5.06	0.63	0.94	0.05	0.94	2.50	-0.34	-2.68	1.96	0.14	0.94	-0.05	0.63	0.00
	13.97		1.78	-0.58	5.84	0.54	0.43	-0.19	2.37	2.06	-1.23	-1.78	2.64	-0.58	0.43	0.19	0.54	0.00
138	14.17		1.82	-0.06	1.76	0.17	0.48	0.06	2.67	0.21	-1.32	-1.82	0.20	-0.06	0.48	-0.06	0.17	0.00

Shaft and Wind Axes Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fx shaft axis lb.	Hub Fy shaft axis lb.	Hub Fz shaft axis lb.	Hub Mx shaft axis in.-lb.	Hub My shaft axis in.-lb.	Hub Mz shaft axis in.-lb.	Pushrod 1 Load lb.	Pushrod 2 Load lb.	Pushrod 3 Load lb.	Lift Wind Axis lb.	Drag Wind Axis lb.	Side Force Wind Axis lb.	Pitch Mom. Wind Axis lb.	Roll Mom. Wind Axis lb.	Yaw Mom. Wind Axis lb.	Shaft Horse Power hp
	15.79		1.89	0.27	0.26	0.31	0.38	-0.21	-1.59	1.76	0.06	-0.02	-1.89	0.27	0.38	0.31	-0.21	0.00
	15.90		0.53	-0.35	1.35	0.15	-0.24	0.08	0.88	-1.67	0.08	-2.07	-0.54	-0.35	-0.24	0.15	0.08	0.00
	15.93		-19.02	-15.72	2.03	0.41	0.37	0.02	-0.85	2.64	2.08	1.81	19.02	-15.72	0.37	0.41	0.02	0.00
			4.96	-0.01	2.72	0.56	0.36	0.01	0.70	2.95	1.82	2.79	-4.93	-0.01	0.36	0.56	0.01	0.00

APPENDIX E

Balance Loads

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
		24.1												
		24.2												
2	12.2	25.1	39.12	17.46	51.17	-26.64	16.32	23.73	8.00	-8.94	7.33	2.77	4.82	-14.11
	12.3	25.2	50.88	17.22	55.81	-25.87	13.82	51.09	9.28	-9.09	9.56	3.01	4.85	-28.97
	12.4		44.33	16.23	58.17	-24.62	12.91	66.14	8.86	-8.96	9.28	2.68	5.48	-40.96
8	12.5	25.3	41.57	16.32	61.69	-24.78	17.55	41.19	9.55	-8.68	8.91	2.46	4.60	-24.91
9	12.6	25.4	46.57	15.90	63.00	-24.15	15.74	57.65	11.90	-8.91	11.29	2.59	4.71	-34.12
10	12.7	25.5	48.87	15.75	65.64	-23.65	15.95	75.43	15.47	-9.13	13.46	2.48	5.33	-44.25
11	12.8	25.6	42.22	15.78	62.27	-25.82	20.91	22.98	8.89	-8.92	10.77	2.45	4.74	-16.05
12	12.9	25.7	40.86	16.25	57.11	-26.53	21.82	4.19	8.91	-9.13	12.21	2.51	2.75	-7.12
18	12.10	28.8	41.23	16.34	60.27	-25.76	17.07	39.98	9.52	-9.08	8.75	2.79	4.48	-24.22
19	12.11	25.9	43.22	15.82	62.57	-25.14	17.28	45.56	12.62	-9.49	10.86	2.68	4.37	-26.49
20	12.12	25.10	47.13	16.07	63.88	-24.78	19.10	52.79	16.43	-9.22	13.27	2.72	5.08	-29.71
21	12.13	25.11	39.68	16.06	57.66	-25.92	17.07	35.51	8.22	-9.16	11.12	2.78	5.59	-22.72
22	12.14	25.12	40.61	15.78	58.36	-26.10	18.08	31.00	9.18	-9.26	13.47	2.54	6.33	-20.84
26	12.15	25.13	41.63	16.46	60.15	-25.31	15.47	43.47	9.64	-8.93	9.06	2.84	4.65	-26.18
27	12.16	25.14	44.58	16.37	60.60	-25.30	17.23	44.27	11.04	-9.21	10.59	2.91	3.94	-26.93
28	12.17	25.15	41.51	16.38	59.12	-25.58	17.71	40.97	9.15	-9.08	7.07	2.80	5.59	-24.74
1	12.18	25.16	40.11	16.48	56.05	-26.09	19.26	10.23	7.90	-9.16	7.23	2.33	5.05	-18.14
	12.19	25.17	38.68	16.73	49.41	-26.00	22.03	43.08	7.73	-9.26	6.73	2.55	4.40	-22.59
	12.20	25.18	35.42	17.21	41.28	-26.07	24.22	72.90	7.24	-9.21	7.03	2.88	5.96	-29.23
	12.21	25.19	36.48	16.26	43.10	-25.68	24.91	71.63	7.30	-9.07	7.24	2.62	5.93	-29.07
	12.22	25.20	42.50	15.76	46.50	-25.36	23.05	96.02	8.00	-9.05	8.14	2.58	4.94	-37.03
	12.23	25.21	51.85	17.40	70.28	-26.54	22.46	113.40	11.02	-9.85	11.73	3.52	5.25	-45.97
3	12.24	25.22	28.87	17.70	61.54	-28.55	23.15	81.59	7.72	-10.98	6.08	3.31	4.99	-33.57
4	12.25	25.23	29.62	17.14	62.60	-28.19	20.86	97.89	9.43	-10.68	8.21	3.59	4.91	-37.74
5	12.26	25.24	34.37	16.91	68.55	-27.57	22.94	115.80	12.47	-10.46	12.07	3.15	4.68	-42.24
6	12.27	25.25	24.68	17.96	61.78	-29.40	24.22	63.86	9.15	-10.88	6.25	3.20	4.97	-29.58
7	12.28	25.26	26.85	18.65	58.69	-30.13	23.26	47.57	10.27	-10.97	7.59	3.28	5.28	-26.02
13	12.29	25.27	27.60	17.93	60.45	-28.64	23.74	82.73	7.94	-10.79	5.69	3.12	5.02	-33.69
14	12.30	25.28	27.01	17.86	58.08	-28.93	24.97	89.25	9.28	-10.52	8.46	3.57	5.19	-33.78

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
15	12.31		29.12	17.78	62.42	-29.68	27.21	96.20	11.54	-10.85	12.34	3.37	4.88	-33.83
16	12.32	25.29	24.96	18.15	64.70	-29.16	24.17	77.27	9.48	-10.79	6.45	3.22	4.82	-33.80
17	12.33	25.30	26.73	18.57	60.03	-28.80	23.53	71.34	11.20	-10.59	9.89	3.12	5.05	-33.62
23	12.34	25.31	27.51	17.82	61.42	-28.74	24.22	82.18	8.02	-10.82	5.71	2.88	5.14	-33.65
24	12.35	25.32	27.88	18.03	57.02	-29.00	21.87	83.84	10.16	-10.42	9.11	2.98	5.22	-33.74
25	12.36	25.33	27.91	18.45	57.57	-28.55	22.78	82.00	5.55	-10.43	7.80	3.37	4.85	-34.00
30	12.37	25.34	45.95	17.22	61.91	-28.88	20.38	20.82	10.73	-9.80	10.06	2.86	5.22	-11.05
	12.38	25.35	49.08	16.74	66.52	-28.26	19.74	33.95	11.56	-9.84	10.77	2.78	4.77	-18.50
	12.39	25.36	53.90	17.36	67.61	-27.74	17.34	46.71	11.53	-9.71	10.97	3.08	4.99	-26.80
	12.40	25.37	53.31	16.88	71.73	-26.91	14.30	51.76	12.49	-9.55	10.16	2.80	5.96	-31.19
35	12.42	26.1	30.76	10.71	32.04	-28.48	16.00	-2.06	6.67	-10.43	6.93	1.07	2.87	-3.66
	12.43	26.2	31.29	10.84	33.59	-27.66	16.64	19.98	7.04	-10.26	7.56	1.19	5.05	-9.33
	12.44	26.3	38.19	10.82	35.69	-27.11	17.87	39.68	7.70	-10.20	9.25	1.22	3.95	-15.81
	12.45	26.4	43.20	10.78	40.94	-26.17	18.83	60.63	8.75	-10.09	10.44	1.28	3.72	-23.91
	12.46	26.5	50.88	10.47	48.20	-25.85	19.31	77.81	10.28	-10.13	12.02	1.28	4.43	-31.91
		26.6												
36	12.47	26.7	35.02	10.62	30.37	-27.62	15.04	10.54	6.61	-10.16	7.55	1.15	2.24	-1.82
	12.48	26.8	37.76	10.67	35.26	-26.81	13.87	30.92	7.51	-10.10	8.08	1.35	4.03	-10.82
	12.49	26.9												
	12.50	26.10	43.20	10.65	39.48	-25.99	14.13	50.07	8.33	-10.07	10.18	1.42	3.46	-20.76
	12.51	26.11	50.95	10.65	46.83	-25.41	19.09	68.26	9.65	-10.08	12.18	1.51	4.14	-31.51
	12.52	26.12	59.00	10.60	53.39	-24.92	20.59	81.65	11.21	-10.02	13.42	1.51	4.40	-40.27
37	12.53	26.13	48.30	10.44	48.35	-25.32	16.37	57.62	10.01	-9.87	11.38	1.19	3.21	-26.71
38	12.54	26.14	50.36	10.13	54.15	-24.88	16.85	69.46	12.90	-10.09	12.56	1.20	3.80	-33.19
39	12.55	26.15	56.54	9.89	60.35	-25.00	17.87	81.52	15.89	-10.00	16.09	1.21	4.49	-39.91
40	12.56	26.16	45.63	10.43	48.75	-26.18	14.67	45.88	9.04	-9.92	10.02	1.23	3.49	-20.43
41	12.57	26.17	39.31	10.19	47.11	-26.98	13.17	32.79	7.84	-10.14	9.77	1.08	3.95	-13.71
42	12.58	26.18												
	12.59	26.19												
	12.60	26.20	49.39	10.38	48.05	-25.31	16.00	56.84	10.22	-9.89	11.61	1.25	3.29	-26.29
43	12.61	26.21	51.32	10.35	52.94	-25.35	17.01	61.54	13.53	-9.99	13.20	1.35	3.26	-28.38

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
44	12.62	26.22	52.41	9.97	54.46	-25.17	17.81	64.41	15.30	-9.91	15.98	1.18	3.46	-29.61
45	12.63	26.23	47.65	10.50	48.38	-25.68	16.85	54.34	8.73	-9.83	10.79	1.37	3.38	-25.45
47	12.64	26.24	45.97	10.13	48.47	-25.55	15.95	56.81	10.31	-9.92	10.90	1.13	3.29	-26.38
48	12.65	26.25	45.78	10.13	44.13	-25.18	16.11	57.11	11.19	-10.05	11.85	1.18	3.72	-26.16
49	12.66	26.26	51.10	10.24	54.55	-25.99	16.64	55.45	9.38	-10.05	8.73	1.35	3.32	-25.88
51	12.68	27.1	28.65	12.57	21.93	-26.63	9.97	13.98	3.76	-10.45	5.45	0.72	4.40	-7.12
	12.69	27.2	31.35	12.31	20.62	-25.76	12.05	33.01	3.83	-10.31	5.90	0.76	3.75	-12.32
	12.70	27.3	34.12	12.18	21.96	-24.96	11.15	53.73	4.44	-10.27	6.90	0.75	3.29	-19.33
	12.71	27.4	35.83	11.88	22.87	-24.21	11.84	72.24	4.30	-10.17	7.11	0.75	3.24	-26.89
	12.72	27.5	40.25	11.78	23.99	-23.82	13.60	91.65	5.38	-10.32	8.81	0.76	3.35	-35.89
	12.73	27.6	42.58	11.17	33.41	-23.24	15.25	106.40	7.78	-10.47	9.27	0.34	3.72	-44.90
	12.74	27.7	52.10	10.66	40.94	-22.89	17.92	122.60	8.23	-10.46	12.20	0.30	4.09	-54.79
	12.75	27.8	54.90	10.47	46.01	-22.89	18.67	132.70	9.25	-10.76	13.31	0.21	4.34	-61.46
50	12.76	27.9	27.28	11.40	35.84	-26.13	16.43	82.90	5.78	-11.13	5.88	0.38	3.26	-22.38
	12.77	27.10	32.22	11.43	31.98	-25.46	18.03	101.40	5.80	-10.88	6.81	0.43	3.41	-27.99
	12.78	27.11	37.91	11.55	32.98	-25.22	18.99	113.80	6.35	-10.90	8.76	0.47	3.61	-32.39
52	12.79	27.12	29.58	11.46	33.23	-25.74	16.91	96.94	5.96	-11.00	5.93	0.40	3.38	-26.45
53	12.80	27.13	32.97	11.27	35.02	-25.29	17.60	106.90	7.61	-11.08	7.63	0.49	3.66	-29.14
54	12.81	27.14	40.53	11.27	34.81	-25.26	19.15	117.20	8.41	-10.86	9.97	0.55	3.75	-32.32
		27.15												
55	12.82	27.16	26.56	11.35	34.81	-26.36	17.39	86.92	6.96	-11.06	4.78	0.48	3.38	-24.11
57	12.83	27.17	31.88	11.57	31.43	-25.58	17.33	97.34	5.68	-10.71	6.16	0.69	3.21	-26.67
58	12.84	27.18	29.98	11.04	36.02	-25.52	16.59	100.10	8.70	-10.86	8.06	0.52	3.72	-26.57
		27.19												
59	12.85	27.20	31.79	10.82	37.17	-26.24	17.76	102.70	9.33	-10.26	10.96	0.86	3.61	-26.22
60	12.86	27.21	32.81	11.67	32.41	-26.11	18.45	95.00	7.29	-10.22	6.96	1.14	3.32	-27.07
62	12.87	27.22												
	12.88	27.23	33.22	11.78	29.25	-26.06	18.35	98.28	5.42	-10.06	6.71	1.25	3.38	-26.73
63	12.89	27.24	35.99	11.38	31.07	-26.03	17.07	98.41	8.00	-10.20	9.69	1.05	3.63	-26.89
64	12.90	27.25	30.51	11.25	34.81	-26.25	17.65	96.86	4.36	-10.26	4.64	1.07	3.63	-26.59
66	13.1	28.1	37.97	17.32	47.75	-26.31	11.89	13.84	7.97	-8.75	7.01	0.25	4.60	-14.20

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
	13.3	28.2	34.43	16.66	45.26	-25.28	10.83	47.23	7.32	-8.46	7.08	0.14	4.34	-22.81
	13.4	28.3	29.84	16.39	41.86	-24.50	10.51	76.65	7.18	-8.46	6.07	0.15	4.85	-34.05
	13.5	28.4	36.45	15.33	47.69	-23.49	10.77	101.20	7.83	-8.48	8.29	-0.08	4.54	-46.22
	13.6	28.5	41.61	15.36	51.21	-23.77	11.52	106.20	8.76	-8.72	9.73	0.13	5.16	-50.65
65	13.7	28.6	44.62	17.67	61.40	-27.42	13.23	31.39	8.95	-9.33	6.72	0.46	4.14	-18.86
	13.8	28.7	47.69	17.68	61.31	-26.40	15.47	59.21	9.35	-9.12	6.94	0.53	3.60	-21.67
	13.9	28.8	49.65	17.21	57.58	-25.78	17.70	89.37	9.27	-9.04	8.07	0.45	4.37	-27.69
	13.10	28.9	51.29	16.78	61.67	-25.53	18.77	115.40	9.52	-8.98	9.66	0.58	5.90	-35.14
	13.11	28.10	47.44	17.07	65.43	-26.55	21.49	131.10	10.54	-9.88	9.62	1.04	6.07	-41.52
67	13.12	28.11	38.22	18.41	67.44	-29.24	20.96	91.86	8.95	-10.60	6.82	1.59	5.48	-30.15
68	13.13	28.12	40.64	18.11	65.74	-28.38	18.18	108.00	10.58	-10.23	7.75	1.63	5.33	-33.96
69	13.14	28.13	39.15	17.44	64.71	-27.64	17.70	123.70	12.14	-10.19	9.09	1.47	5.65	-37.91
70	13.15	28.14	39.12	18.46	65.10	-30.13	23.78	77.20	9.06	-10.91	6.68	1.73	4.94	-27.13
71	13.16	28.15	41.45	18.42	64.61	-29.85	23.46	59.27	9.36	-10.70	7.63	1.77	4.51	-23.74
72	13.17	28.16	43.63	17.75	65.68	-28.26	19.94	93.59	8.79	-10.27	6.53	1.78	5.08	-29.83
73	13.18	28.17	44.00	17.29	63.28	-28.40	19.15	96.17	11.51	-10.17	9.59	1.92	4.97	-29.57
74	13.19	28.18	43.35	17.37	61.40	-28.15	20.10	101.50	13.36	-10.37	11.61	2.14	4.65	-29.75
75	13.20	28.19	43.69	17.64	68.01	-28.22	21.86	89.76	10.26	-10.50	7.72	2.08	5.14	-30.06
76	13.21	28.20	43.22	17.66	68.77	-28.47	20.90	86.93	11.69	-10.62	10.72	2.07	5.36	-30.30
77	13.22	28.21	43.94	17.10	65.83	-28.33	20.21	94.04	8.89	-10.68	6.48	2.22	5.14	-30.15
78	13.23	28.22	46.73	16.78	68.07	-28.49	18.93	94.77	12.26	-10.77	9.59	1.80	4.85	-30.05
79	13.24	28.23	41.64	17.29	64.22	-28.53	20.00	92.85	7.13	-10.55	8.80	2.16	4.80	-30.06
80	13.25	28.24	48.53	17.75	70.86	-29.22	21.92	102.30	12.26	-10.80	9.13	2.41	5.84	-26.06
81	13.26	28.25	54.18	16.94	71.83	-28.64	20.64	116.70	12.60	-10.68	10.57	2.23	5.87	-29.25
82	13.27	28.26	47.88	16.57	55.24	-26.76	16.42	90.19	9.84	-9.71	9.59	2.01	5.96	-29.61
80A	13.29	29.1	29.02	5.68	26.06	-26.00	10.52	17.24	4.83	-9.16	6.03	0.16	1.99	-0.86
	13.30	29.2	27.99	5.59	27.33	-25.63	10.74	22.42	4.76	-9.13	5.80	0.20	2.36	-4.46
	13.31	29.3	29.96	5.67	27.64	-25.22	9.99	27.82	4.64	-9.07	5.74	0.28	3.33	-8.14
	13.32	29.4	30.95	5.64	28.70	-24.96	8.65	33.68	5.10	-9.06	6.13	0.34	2.93	-12.47
	13.33	29.5	31.11	5.55	28.86	-24.63	9.13	38.36	5.26	-9.05	6.39	0.34	2.81	-16.03
		29.6												

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
81A	13.34	29.7	29.83	5.51	21.46	-26.33	9.67	14.86	4.28	-9.15	6.71	0.29	1.68	2.63
	13.35	29.8	29.05	5.33	22.40	-26.05	8.39	20.35	4.16	-9.10	5.61	0.22	2.08	-1.35
	13.36	29.9	27.09	5.39	22.01	-25.69	8.01	26.65	4.00	-9.15	6.11	0.30	2.73	-6.04
	13.37	29.10	27.84	5.43	22.07	-25.20	7.64	32.44	4.21	-9.08	5.98	0.35	2.76	-10.83
	13.38	29.11	29.55	5.47	22.68	-24.71	8.12	38.03	4.27	-9.05	6.33	0.40	2.39	-15.24
	13.39	29.12	30.30	5.50	21.61	-24.40	8.92	43.40	4.26	-9.05	6.34	0.49	2.39	-19.80
	13.40	29.13	30.89	5.48	22.25	-23.87	9.83	48.43	4.39	-9.00	6.65	0.50	2.39	-24.47
	13.41	29.14	32.23	5.41	22.56	-23.31	11.54	53.94	4.67	-8.92	7.00	0.49	2.08	-29.83
	13.42	29.15	34.42	5.41	24.05	-23.31	12.50	59.74	4.86	-8.87	6.55	0.71	2.42	-35.59
81B	13.43	29.16	28.52	5.47	34.12	-25.38	15.01	32.16	5.81	-8.97	4.87	0.14	2.22	1.45
	13.44	29.17	28.90	5.68	29.74	-24.28	11.59	39.87	5.20	-8.95	5.36	0.25	2.39	-10.27
	13.45	29.18	28.31	5.56	27.06	-22.48	11.75	54.24	4.69	-8.85	5.91	0.36	2.33	-33.49
	13.46	29.19	47.76	5.48	44.47	-20.75	19.33	69.17	7.42	-8.83	9.41	0.60	2.70	-62.34
	13.47	29.20	55.61	5.30	54.58	-20.12	22.49	75.37	10.29	-8.80	11.83	0.70	3.04	-77.27
	13.48	29.21	55.83	5.28	54.43	-19.46	22.49	80.73	9.49	-8.82	10.98	0.76	3.41	-89.02
87	13.49	29.22	24.88	5.08	27.85	-23.48	12.02	38.91	4.77	-9.06	5.12	0.27	2.19	-22.86
88	13.50	29.23	26.68	5.01	31.02	-23.73	11.70	39.08	6.99	-8.94	8.31	0.28	2.27	-22.78
89	13.51	29.24	26.81	5.06	30.62	-24.03	13.46	40.23	9.63	-9.01	11.66	0.28	2.44	-23.54
90	13.52	29.25	31.27	5.06	31.66	-24.10	12.55	39.00	7.25	-9.05	7.97	0.36	2.39	-23.32
91	13.53	29.26	28.74	4.80	32.30	-23.63	13.03	40.15	9.86	-9.03	10.33	0.20	2.13	-23.79
92	13.54	29.27	24.57	5.06	28.46	-23.91	11.64	39.72	4.81	-9.13	4.93	0.25	2.22	-22.37
93	13.55	29.28	31.42	5.34	33.97	-23.98	13.14	40.06	9.02	-8.98	9.07	0.39	2.22	-22.87
94	13.56	29.29	28.99	5.33	31.51	-23.92	13.25	40.00	4.02	-8.97	4.77	0.40	2.22	-23.01
		30.1												
95	13.59	30.2	37.19	6.73	42.49	-23.79	16.88	56.79	7.66	-9.11	7.28	-0.36	2.70	-19.10
	13.60	30.3	37.19	5.76	47.73	-21.95	17.73	66.10	8.88	-9.10	8.40	-0.31	2.73	-46.41
	13.61	30.4	31.58	5.58	41.46	-22.82	17.09	58.88	7.52	-9.11	6.54	-0.47	2.62	-32.77
101	13.62	30.5	37.10	5.82	39.69	-23.81	19.39	51.09	7.18	-9.15	7.20	-0.58	2.84	-17.41
95A	13.63	30.6	35.13	5.56	47.82	-22.18	18.53	63.49	8.24	-9.13	7.58	-0.41	2.67	-43.84
101A	13.64	30.7	39.09	5.90	39.91	-23.80	18.96	50.28	6.92	-9.19	7.27	-0.58	2.79	-17.09
102	13.65	30.8	39.75	5.86	42.19	-24.19	18.91	50.58	9.56	-9.05	10.02	-0.49	3.10	-17.05

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
103	13.66	30.9	40.74	5.29	40.18	-23.85	20.72	52.49	13.25	-9.05	13.84	-0.68	3.18	-19.63
104	13.67	30.10	46.42	5.60	46.12	-23.79	22.17	50.48	10.53	-8.89	10.92	-0.52	2.81	-18.98
106	13.68	30.11	37.00	5.61	41.15	-23.64	19.23	50.40	7.51	-8.84	7.09	-0.57	2.84	-17.97
107	13.69	30.12	48.41	5.25	53.21	-23.55	22.11	50.86	14.28	-8.82	13.55	-0.68	3.44	-18.56
108	13.70	30.13	41.15	6.66	42.19	-24.30	19.33	49.99	7.16	-8.93	8.64	-0.25	2.81	-18.32
109	13.72	31.1	27.40	6.63	29.45	-24.45	10.41	44.17	4.56	-8.99	4.29	0.06	2.44	-9.24
110	13.73	31.2	29.23	6.52	33.19	-24.86	14.62	44.08	6.46	-9.08	7.49	-0.03	2.84	-10.14
111	13.74	31.3	31.22	5.88	31.76	-25.19	16.65	42.85	8.44	-9.25	10.48	-0.29	3.04	-10.04
112	13.75	31.4	32.56	5.87	34.28	-24.51	12.11	43.27	7.02	-9.10	7.07	-0.29	2.59	-9.84
113	13.76	31.5	31.19	5.73	30.42	-23.95	12.01	43.36	9.40	-9.07	9.58	-0.35	2.73	-12.17
114	13.77	31.6	41.98	5.14	52.28	-19.74	20.97	68.56	10.73	-8.29	10.64	-0.04	2.78	-51.48
115	13.78	31.7	52.03	5.37	58.84	-20.01	25.19	69.05	14.66	-8.53	14.44	0.05	3.41	-52.72
116	13.79	31.8	52.43	5.06	58.90	-19.43	26.42	69.25	15.31	-8.44	15.34	-0.05	3.72	-52.40
117	13.80	31.9	42.98	4.97	55.35	-20.22	24.49	67.68	10.18	-8.64	9.33	-0.02	3.21	-52.44
118	13.81	31.10	50.16	5.93	61.21	-20.71	25.29	70.22	13.90	-8.72	13.50	0.34	3.18	-57.77
128	13.82	31.11	41.98	3.75	52.95	-20.86	20.23	67.03	10.99	-8.63	10.85	-0.28	3.04	-52.66
129	13.83	31.12	46.65	4.34	55.41	-20.97	25.13	67.55	13.54	-8.74	13.81	-0.13	3.41	-52.80
130	13.84	31.13	48.79	4.51	55.16	-20.74	27.64	67.65	15.49	-8.71	15.78	-0.12	3.64	-53.56
123	13.85		48.76	4.80	58.60	-21.23	22.41	69.82	12.11	-8.66	11.85	0.15	3.15	-61.71
122	13.86	31.14	45.90	4.85	53.65	-21.70	21.34	62.14	11.43	-8.75	11.57	0.15	3.04	-58.37
124	13.87	31.15	44.90	4.99	51.40	-22.17	19.32	56.33	8.67	-9.13	8.19	0.29	2.78	-53.82
122A	13.88	31.16	39.90	5.40	40.91	-24.45	19.10	42.13	6.58	-9.13	6.70	-0.07	2.78	-16.65
122B	13.89		43.50	5.04	50.91	-21.93	20.17	65.28	9.11	-8.90	9.38	0.33	2.78	-58.65
124A	13.90	31.17	53.77	5.41	52.49	-20.47	20.60	76.13	11.24	-8.77	12.16	0.61	3.69	-87.31
125	13.91	31.18	28.80	5.73	31.58	-24.15	13.55	34.66	4.57	-9.29	5.17	0.05	2.30	-29.74
126	13.92		25.97	6.10	33.10	-24.62	14.57	36.60	6.83	-9.11	7.17	0.10	2.41	-29.45
127	13.93	31.19	26.18	6.30	33.13	-24.70	16.76	37.58	8.50	-9.20	8.59	0.14	2.33	-29.50
119	13.94	31.20	27.46	6.28	29.06	-24.40	11.21	34.31	4.52	-9.27	5.49	0.14	2.30	-26.42
120	13.95	31.21	31.07	6.02	33.89	-26.57	14.14	15.00	5.31	-9.27	4.91	-0.28	3.24	5.80
121	13.96	31.22	40.64	6.16	35.35	-22.91	13.93	53.79	6.29	-9.20	8.86	0.37	2.47	-53.22
131	14.1	32.1	26.62	6.78	22.92	-24.91	10.67	39.01	4.32	-9.27	5.37	0.05	2.39	-15.74

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
132	14.2		26.83	6.79	22.62	-24.82	11.47	39.09	4.53	-9.35	6.46	0.07	2.36	-16.09
133	14.3	32.2	25.65	6.77	24.66	-24.81	10.83	39.78	6.13	-9.39	7.01	0.05	2.53	-17.15
133A	14.4	32.3	26.90	6.68	27.24	-24.67	10.83	41.68	8.17	-9.39	8.96	-0.05	2.44	-18.54
134	14.5	32.4	23.29	6.41	23.78	-24.65	9.23	37.15	4.28	-9.38	4.42	-0.23	2.50	-14.18
135	14.6	32.5	23.85	6.25	22.86	-24.70	8.37	35.75	5.50	-9.35	5.73	-0.29	2.58	-12.87
139	14.7	32.6	24.13	6.16	24.50	-24.68	10.24	38.06	4.44	-9.28	4.81	-0.23	2.39	-15.27
140	14.8	32.7	25.90	6.43	26.11	-24.77	10.03	40.29	6.38	-9.44	7.20	-0.18	2.47	-17.27
141	14.9	32.8	25.78	6.17	28.24	-24.55	11.25	42.13	8.80	-9.42	9.43	-0.25	2.61	-19.08
142	14.10	32.9	22.51	6.21	24.20	-24.65	8.37	37.03	4.21	-9.36	4.28	-0.33	2.67	-14.19
143	14.11	32.10	22.70	6.48	23.14	-24.49	8.75	35.83	5.50	-9.24	5.48	-0.19	2.47	-13.14
136	14.12	32.11	24.66	6.53	24.47	-24.47	10.03	38.18	4.39	-9.20	5.02	-0.08	2.75	-15.41
137	14.13	32.12	28.20	6.23	25.96	-25.85	10.99	23.46	5.10	-9.33	5.47	-0.38	1.93	-1.63
138	14.14	32.13	26.86	6.51	22.29	-23.62	11.41	52.06	4.66	-9.09	5.65	-0.05	2.27	-26.62
		33.1												
		33.2												
		33.3												
	15.1	34.1												
	15.2	34.2												
	15.3	34.3	47.10	11.71	54.01	-27.05	24.23	2.64	12.59	-8.94	12.92	-0.26	4.23	-15.46
	15.4	34.4	24.84	10.99	28.93	-25.77	10.97	37.36	5.25	-8.69	5.10	-0.31	3.06	-16.71
	15.5	34.5	24.28	11.08	27.02	-25.65	9.37	45.66	4.60	-8.60	5.22	-0.19	2.78	-17.38
	15.6	34.6	22.79	11.03	25.63	-25.49	8.52	54.11	4.28	-8.61	4.08	-0.14	2.75	-18.40
	15.7	34.7	22.76	11.10	26.38	-25.39	8.84	63.07	4.56	-8.64	4.38	-0.06	2.61	-20.24
	15.8	34.8	24.84	11.27	26.66	-25.36	8.57	72.80	5.18	-8.69	6.27	-0.14	2.50	-22.94
	15.9	34.9	23.78	11.13	27.05	-25.02	9.21	82.36	5.32	-8.76	6.30	-0.07	2.36	-25.84
	15.10	34.10	24.87	10.76	31.30	-24.79	9.48	90.85	6.37	-8.75	6.45	-0.48	2.16	-29.14
	15.11	34.11	24.31	10.61	31.63	-24.68	9.58	102.50	6.61	-8.85	6.71	-0.54	2.13	-33.42
	15.12	34.12	27.23	10.35	34.60	-24.29	10.86	114.40	7.85	-8.88	6.88	-0.49	2.16	-38.44
	15.13	34.13	26.98	9.94	35.72	-23.78	11.71	126.40	8.49	-8.84	6.99	-0.49	2.67	-43.92
	15.14	34.14	30.65	9.10	35.69	-23.56	12.25	137.30	7.92	-9.04	7.12	-0.81	2.64	-49.51
	15.15	34.15	34.75	9.41	37.06	-23.03	13.26	150.60	7.27	-8.78	8.91	-0.73	2.64	-56.73

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
	15.16	34.16	36.52	9.24	37.69	-22.46	14.00	161.80	8.29	-8.72	9.06	-0.62	2.72	-63.65
	15.17	34.17	37.20	9.11	38.69	-22.00	14.16	174.20	9.19	-8.75	9.51	-0.53	2.78	-71.72
	15.18	34.18	39.84	9.00	41.12	-21.68	13.36	184.40	9.89	-8.89	9.91	-0.35	3.18	-79.32
	15.19	34.19	42.69	9.08	40.82	-21.67	13.63	196.70	9.80	-9.08	10.45	-0.27	3.18	-88.70
	15.20	34.20	22.76	9.16	30.72	-28.63	9.27	20.88	5.02	-9.92	4.99	-1.10	3.09	-17.09
	15.21	34.21	22.26	9.40	31.17	-28.95	10.12	16.36	5.28	-10.10	4.80	-0.92	3.06	-17.15
	15.23	35.1	21.70	9.87	33.30	-29.21	10.06	11.06	6.76	-10.31	5.42	-0.78	2.89	-17.49
	15.24	35.2	22.79	10.44	33.57	-29.56	11.34	5.03	6.87	-10.37	5.07	-0.51	2.89	-17.81
	15.25	35.3	27.85	9.84	21.93	-26.15	10.48	3.38	4.56	-9.14	6.31	0.25	2.76	-7.13
	15.26	35.4	27.76	9.88	20.89	-26.19	10.16	9.34	4.05	-9.18	5.69	0.26	2.78	-6.72
	15.27	35.5	28.41	9.88	19.65	-26.15	7.81	15.25	3.82	-9.11	6.17	0.27	2.76	-6.58
	15.28	35.6	25.80	9.81	19.86	-26.00	7.59	20.70	3.86	-9.16	4.93	0.27	2.84	-6.88
	15.29	35.7	25.15	9.83	19.86	-25.89	7.33	26.50	3.26	-9.17	4.07	0.29	2.81	-7.44
	15.30	35.8	25.36	9.75	19.56	-25.81	7.01	32.45	2.94	-9.14	4.50	0.30	2.84	-8.40
	15.31	35.9	25.42	9.66	20.26	-25.67	7.27	38.10	2.87	-9.13	4.19	0.30	2.67	-9.58
	15.32	35.10	26.82	9.80	20.32	-25.66	6.95	44.02	3.45	-9.17	5.54	0.26	2.56	-10.95
	15.33	35.11	26.30	9.70	21.44	-25.47	7.75	50.31	3.09	-9.09	5.07	0.28	2.39	-12.58
	15.34	35.12	26.11	9.70	22.08	-25.15	7.75	57.38	3.09	-9.07	5.08	0.28	2.16	-14.52
	15.35	35.13	27.35	9.76	22.14	-25.04	8.45	65.25	3.51	-9.10	5.28	0.28	2.19	-16.99
	15.36	35.14	27.57	9.62	22.26	-24.76	8.61	72.26	3.64	-9.12	5.68	0.23	2.36	-19.63
	15.37	35.15	28.38	9.64	22.81	-24.54	9.25	80.23	3.73	-9.15	6.40	0.19	2.27	-22.72
	15.38	35.16	27.51	9.57	22.41	-24.38	10.37	88.51	4.43	-9.07	5.35	0.20	2.30	-26.07
	15.39	35.17	28.35	9.52	23.17	-24.29	11.12	96.27	5.01	-9.06	6.48	0.15	2.27	-29.48
	15.40	35.18	30.02	9.49	24.20	-24.08	10.96	104.50	5.17	-9.06	6.68	0.11	2.47	-33.26
	15.41	35.19	28.78	9.51	24.51	-24.02	12.08	108.00	5.36	-9.08	6.74	0.11	2.30	-34.95
	15.42	35.20	29.22	9.52	24.66	-23.87	12.56	112.30	5.50	-9.06	6.79	0.14	2.22	-37.13
	15.43	35.21	30.99	9.46	24.84	-23.80	11.76	116.90	5.62	-9.09	7.13	0.14	2.30	-39.44
	15.44	35.22	31.30	9.37	26.03	-23.67	12.67	120.00	5.73	-9.11	7.19	0.12	2.22	-41.20
	15.45	35.23	32.67	9.37	26.45	-23.57	12.73	124.70	5.98	-9.15	7.46	0.13	2.30	-43.58
	15.46	35.24	33.88	9.53	28.36	-23.41	13.05	130.00	5.39	-9.33	8.36	0.02	2.10	-46.02
	15.47	35.25	35.37	9.57	28.00	-23.31	14.01	133.50	5.76	-9.32	8.47	-0.02	2.42	-48.01

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
	15.48	35.26	35.71	9.40	28.18	-23.11	13.64	137.00	5.74	-9.33	8.84	-0.04	2.44	-50.10
	15.49	35.27	35.71	9.29	28.79	-23.04	14.70	141.20	6.04	-9.44	8.71	-0.12	2.50	-52.45
		35.28												
	15.50	35.29	37.92	8.91	29.73	-23.23	39.73	146.40	30.23	-9.65	9.11	-0.09	12.56	-57.45
	15.51	35.30	39.16	8.86	30.70	-23.10	16.47	153.60	6.21	-9.73	9.25	-0.17	2.59	-62.17
	15.54	36.1	40.72	8.61	31.61	-23.05	17.75	160.30	6.02	-9.62	8.11	-0.05	2.47	-67.17
		36.2												
	15.55	37.1	42.43	8.55	33.62	-22.94	19.41	167.00	6.53	-9.72	8.56	-0.10	2.76	-72.07
	15.57	38.1	28.10	11.13	22.45	-23.92	10.87	105.70	4.26	-8.58	4.91	0.85	2.21	-34.07
	15.58	38.2	40.49	14.10	39.53	-21.13	14.87	189.30	9.94	-9.34	10.99	1.82	2.67	-80.78
	15.59	38.3	49.61	17.56	62.70	-29.10	17.76	-6.48	14.15	-9.96	11.92	1.85	5.31	-17.29
	15.60	38.4	47.50	17.69	49.31	-29.24	20.00	-1.11	9.65	-9.99	9.74	1.91	5.62	-15.61
	15.61	38.5	33.99	17.13	36.97	-28.22	12.85	12.59	7.47	-9.74	7.22	1.80	4.26	-17.22
	15.62	38.6	31.50	17.28	31.81	-28.29	8.96	20.79	5.40	-9.72	6.01	2.00	4.63	-17.44
	15.63	38.7	30.29	17.45	26.67	-27.82	8.27	32.76	4.74	-9.69	5.54	2.16	4.40	-17.52
	15.64	38.8	33.89	17.48	24.79	-27.73	10.29	39.66	3.58	-9.71	6.36	2.18	4.29	-18.01
	15.65	38.9	34.67	17.67	23.42	-27.58	8.59	48.69	3.37	-9.68	6.68	2.32	4.26	-18.97
	15.66	38.10	37.28	17.90	21.75	-27.43	8.75	58.44	3.70	-9.70	7.72	2.42	4.43	-20.82
	15.67	38.11	38.68	18.10	21.48	-27.17	8.80	67.72	5.13	-9.72	8.79	2.51	4.23	-23.14
	15.68	38.12	37.43	18.07	22.88	-27.23	8.80	77.60	4.94	-9.82	8.68	2.51	4.12	-26.21
	15.69	38.13	39.24	17.83	26.85	-27.23	9.49	88.79	5.34	-9.89	8.85	2.36	4.57	-30.32
	15.70	38.14	39.98	16.81	32.38	-26.71	9.39	98.36	6.01	-9.84	9.27	2.10	4.80	-34.42
	15.71	38.15	43.09	16.61	30.17	-26.29	9.97	110.40	6.45	-9.80	10.21	2.07	4.63	-39.76
	15.72	38.16	45.73	16.24	33.81	-25.50	11.41	123.20	6.34	-9.68	10.61	1.99	4.86	-45.35
	15.73	38.17	48.59	15.98	35.30	-25.20	10.98	135.20	6.56	-9.65	11.30	1.99	4.80	-51.53
	15.74	38.18	50.11	15.77	35.15	-24.43	11.57	147.70	7.29	-9.54	11.88	2.00	5.14	-58.21
	15.75	38.19	54.30	15.27	36.82	-23.92	11.73	160.70	8.09	-9.55	12.40	1.84	5.20	-65.85
	15.76	38.20	53.77	15.16	40.34	-23.40	12.85	175.20	9.04	-9.57	12.51	1.83	5.57	-74.37
	15.77	38.21	59.52	15.11	44.96	-22.97	12.74	185.90	10.32	-9.64	13.47	1.86	5.82	-82.17
	15.78	38.22	42.87	14.75	35.27	-25.72	9.81	108.40	6.24	-9.70	9.95	1.34	4.54	-39.99
	15.80	39.1	33.77	13.50	35.97	-28.16	12.00	2.44	6.99	-9.78	6.86	0.58	4.26	-18.73

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
	15.81	39.2	40.38	17.39	29.16	-27.06	10.35	98.90	4.78	-9.89	9.29	2.33	4.71	-34.35
	15.82	39.3	37.40	16.14	38.03	-26.07	13.70	7.56	7.26	-9.28	8.34	1.89	4.60	-17.94
	15.83	39.4	33.27	15.46	32.14	-25.45	9.44	38.05	5.73	-9.12	6.11	1.79	4.29	-17.49
	15.84	39.5	28.24	15.49	29.13	-25.32	10.13	55.36	4.85	-9.13	4.93	1.84	4.32	-19.84
	15.85	39.6	25.44	15.53	33.87	-25.19	9.44	73.77	5.49	-9.28	4.45	1.89	4.40	-24.68
	15.86	39.7	34.33	15.51	45.36	-24.70	8.85	101.80	6.75	-9.24	5.70	1.94	4.77	-34.53
	15.87	39.8	35.32	14.78	48.51	-24.00	9.23	119.70	8.03	-9.18	7.33	1.72	4.57	-42.46
	15.88	39.9	44.11	14.29	48.06	-23.04	10.24	143.10	8.96	-9.18	9.35	1.74	4.77	-54.29
	15.89	39.10	51.41	13.78	54.47	-21.91	11.36	168.40	10.81	-9.15	11.55	1.81	5.48	-69.21
	15.91	40.1	55.39	13.37	54.01	-20.75	13.65	194.60	12.12	-9.29	12.61	1.70	5.88	-86.39
	15.92	40.2	34.51	12.64	47.69	-23.25	8.91	111.20	9.37	-8.83	7.91	0.81	4.71	-39.91
	16.1	41.1	47.25	15.11	47.54	-22.74	10.66	177.00	10.08	-9.38	10.66	2.21	5.31	-71.23
	16.2	42.1	47.59	14.14	46.88	-22.48	11.41	172.50	9.36	-9.27	10.83	2.11	5.34	-69.82
	16.3	42.2	28.83	5.70	31.08	-27.04	8.27	59.56	6.23	-10.07	6.41	-0.89	4.32	-20.73
	16.4	42.3	33.54	6.09	27.72	-25.24	10.08	61.19	6.43	-8.98	7.79	-1.04	4.20	-19.96
	16.5	42.4	33.97	7.35	23.66	-23.17	8.48	24.35	4.99	-8.19	7.96	-0.32	3.80	-19.27
	16.6	42.5	34.87	6.76	25.81	-23.86	9.71	24.24	5.05	-8.61	7.44	-0.44	3.77	-17.45
	16.7	42.6	34.84	6.63	20.50	-23.25	8.54	25.99	4.34	-8.54	7.43	-0.36	3.43	-15.84
	16.8	42.7	35.84	6.85	21.50	-23.02	9.76	56.47	4.18	-8.77	7.04	-0.24	3.55	-21.41
	16.9	42.8	37.55	6.79	24.05	-22.81	12.38	78.62	5.02	-8.88	7.89	-0.29	3.69	-27.16
	16.10	42.9	39.38	6.81	24.87	-22.32	13.34	98.79	5.43	-8.83	8.67	-0.19	3.74	-34.12
	16.11	42.10	41.59	6.64	28.39	-21.85	13.12	116.20	6.30	-8.89	9.29	-0.10	4.08	-42.95
	16.12	42.11	46.25	6.39	34.37	-21.49	14.62	131.50	8.21	-8.99	10.17	-0.08	4.51	-51.65
	16.13	42.12	51.28	6.27	39.47	-21.31	17.82	148.80	9.35	-9.12	10.99	-0.04	4.96	-61.41
	16.14	42.13	57.31	6.05	44.73	-21.19	19.47	155.90	11.34	-9.11	13.33	-0.04	5.16	-66.18
	16.15	42.14	31.80	6.52	20.32	-22.94	8.64	28.31	3.63	-8.39	6.40	-0.20	3.40	-15.38
	16.16	42.15	30.02	6.17	20.25	-23.96	9.87	47.78	3.62	-9.02	5.76	-0.43	3.38	-13.82
	16.17	42.16	31.64	5.75	23.05	-23.83	7.95	47.66	3.93	-8.94	6.68	-0.57	3.04	-13.96
	16.18	42.17	32.88	6.18	25.26	-23.46	7.90	44.54	4.55	-8.88	7.12	-0.41	2.89	-14.72
	16.19	42.18	34.50	6.33	24.78	-23.18	9.23	59.32	4.91	-8.91	7.53	-0.34	2.89	-18.08
	16.20	42.19	36.02	6.29	27.27	-23.16	9.60	71.38	5.64	-8.94	8.17	-0.32	2.95	-22.17

Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Balance Fx Vibratory lb.	Balance Fx Mean lb.	Balance Fy Vibratory lb.	Balance Fy Mean lb.	Balance Fz Vibratory lb.	Balance Fz Mean lb.	Balance Mx Vibratory in.-lb.	Balance Mx Mean in.-lb.	Balance My Vibratory in.-lb.	Balance My Mean in.-lb.	Balance Mz Vibratory in.-lb.	Balance Mz Mean in.-lb.
	16.21	42.20	36.74	6.20	28.24	-23.08	11.36	79.52	6.19	-9.01	8.14	-0.37	2.70	-26.37
	16.22	42.21	38.85	6.15	28.60	-23.03	10.67	87.71	5.76	-9.17	8.39	-0.39	3.01	-30.68
	16.23	42.22	38.85	5.85	31.82	-23.17	10.51	94.86	6.92	-9.37	8.46	-0.42	2.89	-35.05
	16.24	42.23	42.61	5.54	38.96	-24.15	13.39	102.80	9.60	-9.76	9.52	-0.68	3.06	-40.95
	16.25	42.24	47.18	4.68	48.83	-23.51	16.33	110.10	9.81	-9.51	10.62	-1.15	3.29	-48.73
	16.26	42.25	58.40	5.57	55.99	-22.05	18.62	116.30	12.70	-9.11	13.36	-0.64	3.77	-56.89
			65.08	7.21	63.56	-22.05	21.66	123.60	14.82	-9.61	14.24	0.16	4.57	-66.57
49	12.67													
64	12.91		0.56	-0.63	0.55	0.52	1.07	-1.29	0.21	-0.39	0.10	0.66	0.60	-0.27
82	13.28		0.44	1.48	0.46	0.22	0.85	-2.75	0.07	-0.07	0.07	0.98	0.48	-0.10
94	13.57		0.53	-0.01	0.67	0.25	0.85	-5.05	0.09	0.10	0.07	0.64	0.51	-0.02
94	13.58		0.66	-1.30	0.58	0.41	1.02	-7.06	0.07	0.37	0.12	0.60	0.63	0.03
108	13.71		0.69	-1.29	0.61	0.42	1.07	-6.73	0.07	0.37	0.13	0.58	0.60	0.05
	13.97		0.56	-0.39	0.52	-0.28	1.02	-7.47	0.07	0.04	0.12	0.38	0.48	-0.19
138	14.17		0.56	-0.42	0.64	0.22	1.12	-3.40	0.07	-0.16	0.09	0.44	0.51	0.05
	15.79		0.25	-0.50	0.33	0.56	0.37	-1.89	0.05	0.10	0.04	0.31	0.26	-0.21
	15.90		0.47	0.88	0.49	-0.05	0.75	-2.95	0.05	-0.26	0.07	0.16	0.43	0.08
	15.93		0.50	20.23	0.49	-15.52	1.12	-3.61	0.06	-5.28	0.07	7.37	0.54	0.03
			0.44	-3.56	0.46	0.29	0.75	-4.35	0.06	0.24	0.05	-0.78	0.37	0.01

APPENDIX F

Hub Fixed Balance Loads

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
		24.1												
		24.2												
2	12.2	25.1	47.13	-11.11	28.46	-0.88	11.01	0.44	6.59	2.67	16.30	-23.41	4.83	-14.14
	12.3	25.2	53.47	-10.41	36.24	-0.48	12.85	0.30	6.07	2.11	13.72	-50.78	4.83	-29.02
	12.4		52.70	-9.54	37.38	-0.17	12.58	0.59	5.50	3.44	12.82	-65.83	5.46	-41.03
8	12.5	25.3	58.20	-10.91	30.77	-0.53	12.06	0.96	5.72	4.19	17.48	-40.88	4.58	-24.96
9	12.6	25.4	60.33	-10.99	35.90	-0.47	11.03	0.73	4.61	3.83	15.44	-57.35	4.68	-34.18
10	12.7	25.5	60.96	-11.45	40.48	-0.54	10.73	0.81	5.53	3.24	15.63	-75.13	5.32	-44.32
11	12.8	25.6	53.44	-10.93	35.17	-0.63	13.34	0.72	7.54	4.31	20.83	-22.69	4.75	-16.08
12	12.9	25.7	50.85	-11.47	35.33	-0.94	13.68	0.74	8.86	3.52	21.76	-3.90	2.79	-7.15
18	12.10	28.8	56.78	-10.81	31.03	-0.68	12.26	0.39	6.43	3.54	16.98	-39.69	4.46	-24.27
19	12.11	25.9	58.16	-11.59	31.29	-1.01	9.76	0.47	5.21	3.54	16.70	-45.28	4.35	-26.54
20	12.12	25.10	60.81	-12.26	33.39	-1.18	10.29	0.83	6.87	3.14	18.46	-52.50	5.08	-29.76
21	12.13	25.11	54.01	-10.08	29.94	-0.51	13.98	0.79	7.50	3.37	17.02	-35.23	5.57	-22.76
22	12.14	25.12	54.73	-9.87	30.34	-0.37	15.78	0.78	9.33	3.34	18.07	-30.71	6.31	-20.88
26	12.15	25.13	56.61	-10.62	31.39	-0.70	11.92	0.66	5.95	3.59	15.39	-43.18	4.63	-26.23
27	12.16	25.14	59.39	-10.78	34.45	0.17	11.10	0.99	4.59	3.41	17.05	-43.99	3.95	-26.98
28	12.17	25.15	57.23	-10.39	30.81	-1.49	13.24	0.63	7.87	3.47	17.72	-40.68	5.57	-24.79
1	12.18	25.16	50.00	-10.24	34.49	0.71	9.16	0.58	9.82	3.97	19.52	-9.91	5.04	-18.17
	12.19	25.17	44.65	-9.80	33.48	1.12	8.80	0.59	8.48	4.07	21.69	-42.76	4.39	-22.64
	12.20	25.18	43.06	-9.48	34.13	1.64	8.69	0.58	6.22	3.97	23.84	-72.59	5.97	-29.30
	12.21	25.19	41.17	-9.45	33.80	1.71	8.79	0.77	6.28	4.41	24.91	-71.32	5.93	-29.14
	12.22	25.20	41.55	-8.52	31.49	2.35	9.50	0.63	6.52	4.49	23.12	-95.71	4.95	-37.12
	12.23	25.21	58.64	-7.53	52.99	2.56	11.66	-3.27	7.90	1.98	22.47	-113.10	5.26	-46.07
3	12.24	25.22	54.58	-8.13	50.20	1.03	11.35	-5.39	8.49	1.74	23.32	-81.29	5.02	-33.65
4	12.25	25.23	58.13	-8.91	48.33	0.67	10.60	-5.05	7.32	1.74	21.21	-97.62	4.93	-37.83
5	12.26	25.24	63.81	-10.28	55.47	0.52	11.94	-4.37	7.49	2.55	23.45	-115.50	4.69	-42.35
6	12.27	25.25	57.68	-7.56	49.85	1.05	11.80	-5.15	9.17	2.16	24.17	-63.54	4.97	-29.65
7	12.28	25.26	60.79	-7.57	51.12	1.02	13.19	-4.93	10.56	1.68	23.10	-47.24	5.28	-26.08
13	12.29	25.27	54.47	-7.93	50.04	1.10	11.41	-5.29	8.15	1.61	23.86	-82.41	5.05	-33.78
14	12.30	25.28	55.41	-9.48	45.73	0.61	9.59	-5.04	6.04	1.51	25.22	-88.96	5.21	-33.87
15	12.31		58.83	-11.19	52.28	0.38	10.82	-5.43	7.94	1.83	27.54	-95.89	4.92	-33.92
16	12.32	25.29	57.26	-6.46	52.38	1.34	12.63	-5.14	9.85	1.77	24.10	-76.94	4.82	-33.88
17	12.33	25.30	58.68	-5.36	47.66	1.64	14.83	-4.29	11.70	1.86	23.34	-71.00	5.03	-33.69

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
23	12.34	25.31	55.11	-7.92	50.62	1.07	11.57	-5.42	8.19	1.62	24.33	-81.84	5.16	-33.73
24	12.35	25.32	55.14	-8.43	46.78	2.63	8.76	-5.45	5.49	1.88	22.00	-83.50	5.22	-33.82
25	12.36	25.33	57.48	-7.81	47.79	-0.37	14.09	-4.64	9.69	1.52	22.86	-81.68	4.87	-34.08
30	12.37	25.34	64.74	-13.38	32.21	-1.65	12.99	-1.99	8.25	1.29	20.56	-20.52	5.20	-11.09
	12.38	25.35	69.11	-13.06	32.88	-1.61	13.85	-2.14	8.63	1.31	19.54	-33.65	4.75	-18.55
	12.39	25.36	69.85	-12.65	36.39	-1.49	14.91	-1.61	8.50	0.92	17.12	-46.40	4.97	-26.85
	12.40	25.37	67.80	-12.43	39.37	-1.42	15.46	-1.43	8.15	1.89	14.49	-51.44	5.93	-31.25
35	12.42	26.1	28.93	-9.85	22.23	-0.49	6.60	0.41	5.02	1.06	16.24	2.32	2.86	-3.68
	12.43	26.2	32.91	-9.60	21.65	-0.22	6.76	0.73	4.83	1.43	16.89	-19.72	5.05	-9.37
	12.44	26.3	35.63	-9.36	25.94	0.11	7.26	0.89	4.88	1.24	18.14	-39.42	3.94	-15.86
	12.45	26.4	38.35	-8.71	33.18	0.57	8.44	0.98	4.83	1.17	19.10	-60.37	3.71	-23.97
	12.46	26.5	43.92	-8.34	39.25	1.00	9.96	1.26	5.38	0.97	19.57	-77.55	4.42	-31.98
		26.6												
36	12.47	26.7	27.24	-9.90	27.06	-0.78	5.81	0.47	6.26	0.58	15.25	-10.30	2.24	-1.86
	12.48	26.8	32.60	-9.70	27.58	-0.77	6.98	0.55	6.08	0.53	13.72	-30.68	4.01	-10.86
	12.49	26.9												
	12.50	26.10	35.96	-9.12	31.91	-0.47	7.88	0.57	6.22	0.25	14.27	-49.83	3.46	-20.82
	12.51	26.11	43.89	-8.57	37.75	-0.31	9.72	0.78	6.04	0.00	19.01	-68.02	4.13	-31.58
	12.52	26.12	49.65	-8.22	42.33	-0.06	10.75	1.01	6.86	0.15	20.54	-81.40	4.37	-40.35
37	12.53	26.13	48.65	-8.77	34.99	-0.09	8.28	0.60	6.17	2.07	16.34	-57.36	3.23	-26.77
38	12.54	26.14	50.19	-9.33	39.44	-0.21	7.84	0.47	4.60	1.80	16.95	-69.21	3.79	-33.26
39	12.55	26.15	55.35	-10.02	47.12	-0.39	8.59	0.48	8.10	1.57	18.02	-81.26	4.49	-39.99
40	12.56	26.16	52.49	-8.57	33.88	-0.04	9.00	0.59	8.05	2.38	14.85	-45.63	3.49	-20.49
41	12.57	26.17	48.09	-8.63	29.70	-0.08	9.88	0.15	9.62	2.31	13.01	-32.54	3.96	-13.76
42	12.58	26.18												
	12.59	26.19												
	12.60	26.20	47.44	-8.97	35.41	-0.15	8.09	0.58	5.84	2.03	15.97	-56.59	3.31	-26.35
43	12.61	26.21	51.85	-10.09	39.25	-0.55	7.20	0.60	6.43	2.00	17.25	-61.30	3.24	-28.44
44	12.62	26.22	51.47	-10.92	42.45	-0.91	8.46	0.28	9.50	1.97	18.16	-64.16	3.48	-29.68
45	12.63	26.23	52.65	-7.82	34.55	0.32	10.07	0.84	8.83	2.11	16.71	-54.09	3.38	-25.51
47	12.64	26.24	47.53	-8.88	34.91	-0.07	8.01	0.25	6.03	2.00	15.85	-56.56	3.29	-26.44
48	12.65	26.25	44.44	-9.23	34.96	0.92	6.06	0.35	5.98	1.89	16.11	-56.86	3.72	-26.22
49	12.66	26.26	54.35	-8.48	40.98	-1.17	10.81	0.45	9.14	1.91	16.69	-55.21	3.30	-25.94
51	12.68	27.1	24.28	-4.94	19.12	-0.16	6.87	0.53	6.55	-0.07	10.00	-13.66	4.40	-7.15

Hub Fixed Balance Loads

Sikorsky	Lorber	Witness	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed	Hub Fixed
Aircraft	Run	Run,	Bal. Fx	Bal. Fx	Bal. Fy	Bal. Fy	Bal. Mx	Bal. Mx	Bal. My	Bal. My	Bal. Fz	Bal. Fz	Bal. Mz	Bal. Mz
Test	Number	Point	Vibratory	Mean	Vibratory	Mean	Vibratory	Mean	Vibratory	Mean	Vibratory	Mean	Vibratory	Mean
Condition			lb.	lb.	lb.	lb.	in.-lb.	in.-lb.	in.-lb.	in.-lb.	lb.	lb.	in.-lb.	in.-lb.
	12.69	27.2	24.71	-4.84	19.07	0.07	7.25	0.67	6.27	-0.07	12.04	-32.69	3.75	-12.36
	12.70	27.3	21.78	-4.70	20.93	0.40	7.63	0.57	5.77	-0.08	11.04	-53.42	3.28	-19.38
	12.71	27.4	21.19	-4.35	22.73	0.80	8.30	0.63	5.71	-0.30	11.66	-71.92	3.25	-26.96
	12.72	27.5	21.87	-4.19	25.85	1.38	8.46	0.79	5.59	-0.36	13.44	-91.33	3.36	-35.97
	12.73	27.6	22.65	-4.08	31.03	1.92	9.17	0.77	6.08	1.04	15.20	-106.00	3.71	-44.99
	12.74	27.7	32.52	-3.37	34.51	2.97	10.32	0.99	6.86	1.52	17.83	-122.30	4.07	-54.90
	12.75	27.8	36.11	-3.11	41.66	3.15	11.03	0.95	6.92	1.41	18.49	-132.30	4.32	-61.57
50	12.76	27.9	27.68	-4.45	20.96	2.42	8.92	-1.15	7.02	-0.06	16.65	-82.57	3.27	-22.46
	12.77	27.10	20.24	-4.26	24.49	3.24	9.44	-0.34	6.19	-0.03	18.17	-101.00	3.43	-28.08
	12.78	27.11	23.02	-4.15	29.61	3.77	10.05	0.04	6.26	-0.06	19.15	-113.50	3.63	-32.49
52	12.79	27.12	23.59	-4.19	23.27	2.94	9.38	-0.65	6.43	-0.06	17.07	-96.60	3.40	-26.53
53	12.80	27.13	18.22	-5.13	28.48	2.94	9.01	-0.22	6.27	0.01	17.80	-106.60	3.68	-29.23
54	12.81	27.14	20.43	-6.20	35.50	2.86	9.89	0.18	8.05	0.03	19.56	-116.90	3.76	-32.42
		27.15												
55	12.82	27.16	27.28	-3.46	23.49	2.83	9.75	-0.94	7.57	-0.05	17.56	-86.59	3.38	-24.19
57	12.83	27.17	21.46	-4.28	23.41	2.92	9.09	-0.34	6.00	-0.03	17.49	-97.02	3.23	-26.76
58	12.84	27.18	18.15	-6.04	27.64	2.61	7.76	-0.34	6.94	0.06	16.91	-99.82	3.74	-26.66
		27.19												
59	12.85	27.20	18.70	-7.84	31.69	2.20	9.12	-0.36	8.86	0.02	18.18	-102.40	3.62	-26.31
60	12.86	27.21	21.57	-2.66	25.70	3.24	10.25	-0.06	7.24	-0.08	18.55	-94.70	3.34	-27.15
62	12.87	27.22												
	12.88	27.23	21.76	-4.46	24.65	2.91	8.00	-0.12	5.59	-0.09	18.38	-97.99	3.40	-26.82
63	12.89	27.24	17.81	-4.68	24.05	4.54	6.34	-0.12	5.05	-0.10	17.07	-98.12	3.64	-26.98
64	12.90	27.25	21.48	-4.17	30.02	1.41	10.36	-0.26	8.80	-0.04	18.06	-96.58	3.65	-26.68
66	13.1	28.1	60.39	0.03	60.21	-21.03	12.09	0.00	12.19	0.00	12.04	-13.35	4.61	-14.23
	13.3	28.2	37.69	-5.55	27.93	0.06	8.15	-0.25	9.28	2.08	10.65	-46.74	4.36	-22.86
	13.4	28.3	34.47	-4.98	27.59	0.53	8.01	-0.48	7.78	2.58	10.42	-76.16	4.88	-34.12
	13.5	28.4	38.69	-4.04	29.86	1.04	9.70	-0.61	8.41	2.29	10.68	-100.70	4.58	-46.30
	13.6	28.5	45.44	-3.42	34.00	1.39	10.56	-0.79	9.38	2.11	11.50	-105.70	5.19	-50.74
65	13.7	28.6	52.56	-5.30	48.16	0.94	8.80	-0.40	13.06	2.90	13.54	-30.90	4.16	-18.90
	13.8	28.7	51.46	-5.01	49.38	1.33	8.85	-0.20	12.64	2.93	15.45	-58.72	3.64	-21.73
	13.9	28.8	52.25	-4.58	47.94	1.96	8.75	-0.20	12.19	3.26	17.77	-88.88	4.39	-27.77
	13.10	28.9	53.01	-4.01	47.56	2.65	8.92	-0.54	12.67	2.95	18.40	-114.90	5.89	-35.24
	13.11	28.10	55.04	-3.46	49.21	2.70	9.34	-2.97	12.77	1.26	21.58	-130.60	6.07	-41.63

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
67	13.12	28.11	54.03	-3.90	54.45	1.29	10.66	-4.43	11.25	1.65	20.59	-91.41	5.46	-30.24
68	13.13	28.12	50.81	-4.34	53.35	1.19	10.02	-4.29	11.61	1.24	17.85	-107.60	5.32	-34.06
69	13.14	28.13	53.15	-4.99	50.27	1.02	9.81	-3.72	11.42	1.30	17.51	-123.30	5.64	-38.01
70	13.15	28.14	57.43	-3.62	52.87	1.35	10.58	-4.47	10.67	1.93	23.54	-76.76	4.92	-27.21
71	13.16	28.15	56.94	-3.50	51.79	1.30	11.24	-3.76	11.03	2.31	23.22	-58.84	4.53	-23.80
72	13.17	28.16	51.50	-4.14	51.54	1.34	10.19	-3.63	11.41	1.91	19.66	-93.18	5.08	-29.91
73	13.18	28.17	51.80	-5.66	50.31	0.67	8.12	-3.46	11.62	1.85	19.01	-95.78	4.97	-29.66
74	13.19	28.18	53.35	-7.38	51.84	0.17	8.27	-3.10	13.85	2.04	20.08	-101.10	4.66	-29.84
75	13.20	28.19	54.00	-2.67	54.17	1.87	11.58	-3.48	11.66	2.15	21.55	-89.38	5.14	-30.14
76	13.21	28.20	56.06	-1.45	56.59	2.37	12.68	-3.54	12.96	2.19	20.47	-86.54	5.35	-30.38
77	13.22	28.21	52.61	-4.03	51.23	1.37	10.61	-3.69	10.88	1.98	19.82	-93.67	5.14	-30.24
78	13.23	28.22	52.90	-4.52	53.86	2.98	7.94	-4.01	11.11	2.29	18.59	-94.39	4.84	-30.14
79	13.24	28.23	54.94	-3.57	51.52	-0.05	12.32	-3.75	11.59	1.98	19.73	-92.47	4.79	-30.15
80	13.25	28.24	59.82	-2.37	64.32	2.43	10.22	-2.45	13.06	1.86	22.23	-102.00	5.84	-26.15
81	13.26	28.25	62.86	-2.40	64.61	2.82	10.59	-2.27	13.53	1.30	20.72	-116.30	5.87	-29.35
82	13.27	28.26	43.23	-2.01	50.48	0.76	12.87	-1.49	9.01	-0.52	16.37	-89.83	5.95	-29.70
80A	13.29	29.1	26.49	-6.18	16.06	0.20	5.65	0.91	4.36	0.46	10.31	-17.05	1.98	-0.89
	13.30	29.2	26.27	-6.06	14.90	0.19	5.59	0.82	4.65	0.37	10.51	-22.23	2.35	-4.50
	13.31	29.3	25.99	-5.91	13.90	0.21	5.82	0.74	5.22	0.43	9.94	-27.63	3.33	-8.18
	13.32	29.4	25.74	-5.75	13.15	0.02	5.77	0.72	5.40	0.39	8.54	-33.49	2.92	-12.52
	13.33	29.5	25.08	-5.63	14.72	0.04	5.60	0.71	5.75	0.37	8.89	-38.17	2.82	-16.08
		29.6												
81A	13.34	29.7	17.49	-4.53	16.53	0.34	5.30	0.84	3.84	0.10	9.45	-14.69	1.69	2.59
	13.35	29.8	18.26	-4.38	16.31	0.31	5.56	0.83	4.57	0.12	8.37	-20.17	2.07	-1.39
	13.36	29.9	18.57	-4.58	14.35	0.19	5.20	0.64	4.35	0.10	7.83	-26.47	2.73	-6.08
	13.37	29.10	18.17	-4.51	13.94	0.15	5.13	0.56	4.54	0.17	7.52	-32.26	2.75	-10.87
	13.38	29.11	17.69	-4.47	14.64	0.12	4.82	0.52	4.86	0.17	8.08	-37.85	2.39	-15.29
	13.39	29.12	15.48	-4.29	15.06	0.16	4.73	0.53	5.21	0.13	9.03	-43.22	2.40	-19.85
	13.40	29.13	14.62	-4.20	14.40	-0.05	4.73	0.51	5.31	0.14	9.97	-48.25	2.40	-24.53
	13.41	29.14	14.81	-4.00	15.35	-0.03	4.82	0.49	5.52	0.15	11.43	-53.76	2.09	-29.89
	13.42	29.15	16.78	-3.38	16.94	0.24	5.35	0.55	6.17	0.02	12.39	-59.57	2.43	-35.65
81B	13.43	29.16	21.79	0.30	22.19	-3.08	4.90	-0.09	7.41	-0.15	15.28	-31.97	2.24	1.40
	13.44	29.17	22.88	-0.03	19.10	-2.67	4.14	-0.13	6.95	-0.05	11.65	-39.68	2.39	-10.32
	13.45	29.18	18.43	-0.69	16.76	-2.74	4.51	-0.13	6.82	-0.04	11.75	-54.04	2.33	-33.54

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
	13.46	29.19	25.74	-0.73	33.80	-2.33	7.51	-0.16	9.13	0.04	19.12	-68.97	2.71	-62.40
	13.47	29.20	31.37	-1.36	42.92	-2.48	8.54	-0.08	9.69	0.14	22.19	-75.18	3.06	-77.34
	13.48	29.21	32.42	-1.10	42.18	-2.20	9.91	-0.08	9.64	0.10	22.18	-80.54	3.43	-89.10
87	13.49	29.22	19.18	-0.28	18.51	-2.66	4.30	-0.07	6.71	0.15	12.11	-38.73	2.20	-22.91
88	13.50	29.23	23.82	-3.23	23.08	-4.35	4.29	-0.05	7.36	0.09	11.77	-38.91	2.29	-22.83
89	13.51	29.24	23.95	-5.51	24.55	-6.06	7.04	-0.04	9.10	0.09	13.60	-40.05	2.46	-23.59
90	13.52	29.25	22.44	2.02	21.95	-0.88	7.36	0.02	7.95	0.18	12.47	-38.83	2.38	-23.37
91	13.53	29.26	19.31	3.85	19.05	1.03	10.43	-0.02	9.69	0.02	13.43	-39.97	2.13	-23.84
92	13.54	29.27	20.16	0.08	20.65	-2.51	4.83	-0.04	6.93	0.12	11.63	-39.54	2.22	-22.42
93	13.55	29.28	23.70	-2.06	24.38	-0.26	4.93	0.00	5.47	0.17	12.99	-39.88	2.21	-22.92
94	13.56	29.29	23.17	1.61	23.47	-4.90	6.60	-0.01	9.95	0.13	13.39	-39.82	2.22	-23.07
		30.1												
95	13.59	30.2	24.48	-3.22	42.77	-6.06	4.76	-0.09	10.15	0.02	16.86	-56.52	2.70	-19.16
	13.60	30.3	30.93	-3.13	44.05	-5.45	5.18	-0.14	11.77	0.05	17.74	-65.85	2.75	-46.47
	13.61	30.4	29.13	-2.56	36.65	-5.60	4.51	-0.13	10.18	0.08	16.99	-58.63	2.63	-32.83
101	13.62	30.5	26.72	-2.62	37.88	-5.77	5.12	-0.04	9.73	0.05	19.38	-50.83	2.84	-17.47
95A	13.63	30.6	31.44	-2.59	39.75	-5.23	5.26	-0.13	11.20	0.06	18.54	-63.23	2.68	-43.90
101A	13.64	30.7	26.60	-1.58	38.79	-5.50	5.29	-0.01	10.03	0.05	18.90	-50.02	2.79	-17.14
102	13.65	30.8	29.32	-6.66	49.35	-9.55	7.02	-0.02	9.53	0.16	19.23	-50.32	3.11	-17.11
103	13.66	30.9	27.87	-11.04	43.21	-13.56	10.57	-0.18	11.10	0.29	21.18	-52.24	3.21	-19.68
104	13.67	30.10	26.46	3.06	40.70	-1.16	8.56	0.11	11.10	-0.15	22.21	-50.23	2.81	-19.04
106	13.68	30.11	25.81	-2.82	39.46	-5.51	4.89	-0.12	9.99	0.02	19.14	-50.14	2.84	-18.03
107	13.69	30.12	28.19	-6.32	48.96	-1.02	6.97	-0.10	9.78	-0.08	21.82	-50.61	3.43	-18.61
108	13.70	30.13	27.24	1.93	44.51	-9.21	9.26	0.13	13.33	-0.03	19.39	-49.73	2.82	-18.38
109	13.72	31.1	22.14	-0.11	20.97	-3.34	4.34	-0.16	8.11	-0.07	10.66	-43.95	2.45	-9.30
110	13.73	31.2	22.40	-3.77	27.89	-4.96	5.18	-0.13	8.36	-0.11	14.86	-43.85	2.85	-10.19
111	13.74	31.3	22.66	-6.73	30.95	-6.61	7.25	-0.08	9.89	-0.13	17.03	-42.61	3.05	-10.09
112	13.75	31.4	20.51	3.89	20.96	-1.22	6.96	-0.22	8.63	0.25	12.24	-43.04	2.61	-9.89
113	13.76	31.5	18.94	6.58	17.21	0.85	9.76	-0.02	10.20	0.17	12.24	-43.13	2.72	-12.22
114	13.77	31.6	30.28	-5.22	49.32	-6.14	4.80	-0.14	10.80	0.09	21.49	-68.34	2.76	-51.54
115	13.78	31.7	31.83	-11.22	59.77	-9.76	7.43	-0.13	12.04	0.22	25.87	-68.83	3.44	-52.78
116	13.79	31.8	31.29	-12.94	60.49	-10.80	8.57	-0.26	12.63	0.33	27.15	-69.03	3.74	-52.47
117	13.80	31.9	28.28	2.21	52.37	-2.03	8.59	-0.02	12.69	0.00	24.80	-67.47	3.22	-52.50
118	13.81	31.10	30.33	7.83	56.19	1.97	12.57	0.09	13.90	-0.16	25.60	-70.01	3.18	-57.84

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
128	13.82	31.11	29.88	-5.82	51.37	-6.29	5.34	-0.10	10.39	0.05	20.42	-66.82	3.04	-52.73
129	13.83	31.12	28.95	-10.65	54.58	-9.08	7.64	-0.27	10.80	0.16	25.78	-67.34	3.41	-52.87
130	13.84	31.13	31.44	-13.61	55.82	-10.95	9.34	-0.29	11.77	0.23	28.39	-67.44	3.64	-53.63
123	13.85		32.05	-5.44	56.41	-5.78	5.29	-0.09	11.08	0.01	22.76	-69.61	3.16	-61.77
122	13.86	31.14	30.11	-4.97	49.31	-5.30	5.03	-0.14	9.83	0.06	21.61	-61.93	3.05	-58.43
124	13.87	31.15	27.41	-0.86	47.96	-4.35	7.30	-0.09	11.91	-0.04	19.63	-56.13	2.79	-53.88
122A	13.88	31.16	25.12	0.26	38.42	-5.18	6.23	-0.03	9.96	-0.17	19.01	-41.92	2.78	-16.70
122B	13.89		30.41	-3.04	47.69	-6.12	5.93	-0.08	11.63	-0.06	20.47	-65.08	2.79	-58.72
124A	13.90	31.17	31.34	-4.06	50.67	-5.56	7.50	-0.10	11.63	0.01	20.87	-75.92	3.72	-87.38
125	13.91	31.18	18.79	-0.02	25.93	-3.46	4.60	0.05	8.98	-0.11	13.59	-34.45	2.30	-29.79
126	13.92		17.86	-2.84	29.24	-4.48	3.79	0.06	7.32	-0.03	14.57	-36.37	2.42	-29.49
127	13.93	31.19	17.92	-4.93	31.78	-5.31	5.16	0.18	7.19	-0.02	16.70	-37.35	2.34	-29.55
119	13.94	31.20	16.56	-0.40	22.95	-2.88	4.29	0.00	8.19	-0.06	11.40	-34.09	2.30	-26.46
120	13.95	31.21	14.45	0.83	28.52	-3.56	5.58	0.02	8.45	-0.19	14.27	-14.77	3.24	5.77
121	13.96	31.22	20.13	-1.10	29.12	-2.20	5.75	0.03	8.72	-0.02	14.06	-53.57	2.46	-53.28
131	14.1	32.1	14.48	-3.96	13.12	0.14	5.41	0.10	5.34	0.03	10.73	-38.78	2.38	-15.79
132	14.2		15.30	-4.43	13.05	-0.09	5.05	0.06	4.85	0.15	11.60	-38.86	2.35	-16.14
133	14.3	32.2	20.84	-5.46	15.44	-0.46	5.11	0.10	4.20	0.33	10.96	-39.55	2.53	-17.19
133A	14.4	32.3	23.16	-6.40	16.58	-1.02	6.87	0.06	6.30	0.45	11.02	-41.44	2.46	-18.59
134	14.5	32.4	12.56	-2.60	14.10	0.41	6.56	0.14	7.40	0.07	9.25	-36.91	2.50	-14.23
135	14.6	32.5	10.56	-1.70	13.98	0.92	8.52	0.08	8.44	-0.03	8.29	-35.51	2.57	-12.91
139	14.7	32.6	14.22	-3.84	13.91	0.20	5.53	0.03	5.89	0.24	10.35	-37.82	2.38	-15.32
140	14.8	32.7	18.87	-5.39	13.77	-0.26	4.57	0.01	4.33	0.32	10.20	-40.05	2.47	-17.32
141	14.9	32.8	21.03	-6.34	14.48	-0.75	6.08	-0.13	5.61	0.39	11.56	-41.89	2.61	-19.13
142	14.10	32.9	13.31	-2.52	14.15	0.35	6.72	0.07	7.66	0.08	8.26	-36.78	2.66	-14.23
143	14.11	32.10	12.19	-1.66	14.30	0.79	8.36	0.14	8.90	0.00	8.50	-35.59	2.46	-13.19
136	14.12	32.11	14.60	-3.84	13.99	0.19	5.49	0.11	5.66	0.31	10.14	-37.95	2.75	-15.46
137	14.13	32.12	17.72	-4.61	16.87	0.49	5.96	0.41	5.60	0.36	10.84	-23.22	1.92	-1.67
138	14.14	32.13	11.35	-3.03	14.77	0.04	5.94	-0.03	5.65	0.26	11.57	-51.81	2.28	-26.68
		33.1												
		33.2												
		33.3												
	15.1	34.1												
	15.2	34.2												

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
	15.3	34.3	25.68	-2.53	48.87	0.36	10.24	-0.52	9.03	0.26	24.22	-2.25	4.24	-15.48
	15.4	34.4	18.09	-2.29	21.29	-0.11	7.66	-0.33	8.58	-0.04	11.13	-36.98	3.08	-16.75
	15.5	34.5	15.69	-2.09	19.67	-0.12	7.21	-0.52	8.22	-0.13	9.56	-45.29	2.80	-17.43
	15.6	34.6	15.35	-1.93	17.79	-0.12	6.99	-0.46	7.97	-0.33	8.70	-53.75	2.77	-18.45
	15.7	34.7	15.22	-1.85	17.82	-0.14	7.03	-0.55	8.04	-0.38	9.00	-62.71	2.63	-20.30
	15.8	34.8	16.74	-2.19	19.56	-0.23	6.85	-0.57	7.11	-0.32	8.77	-72.42	2.52	-23.01
	15.9	34.9	17.88	-2.25	19.19	-0.26	6.24	-0.58	7.04	-0.38	9.43	-81.99	2.38	-25.92
	15.10	34.10	19.84	-2.04	21.79	-0.23	6.77	-0.87	7.40	-0.47	9.64	-90.46	2.18	-29.22
	15.11	34.11	20.42	-2.05	22.47	-0.23	6.71	-0.92	7.44	-0.52	9.63	-102.10	2.14	-33.50
	15.12	34.12	20.24	-1.34	26.91	0.07	7.24	-1.20	7.37	-0.61	10.80	-114.00	2.17	-38.54
	15.13	34.13	21.76	-0.89	27.27	0.23	7.80	-1.41	7.29	-0.82	11.64	-126.00	2.67	-44.03
	15.14	34.14	21.28	-0.64	28.67	-0.06	7.88	-1.17	7.73	-0.89	12.38	-136.90	2.64	-49.62
	15.15	34.15	21.24	-1.09	31.06	-0.56	7.85	-1.14	8.26	-0.95	13.35	-150.20	2.63	-56.85
	15.16	34.16	21.93	-0.67	32.96	-0.46	8.05	-1.08	8.21	-0.95	14.13	-161.40	2.73	-63.78
	15.17	34.17	22.78	-0.23	33.37	-0.19	8.23	-0.94	7.65	-0.91	14.12	-173.80	2.79	-71.86
	15.18	34.18	24.12	0.30	35.61	-0.26	8.58	-0.88	7.86	-1.03	13.29	-184.00	3.18	-79.46
	15.19	34.19	24.12	0.60	37.52	-0.54	8.56	-0.79	8.42	-0.92	13.59	-196.40	3.18	-88.85
	15.20	34.20	17.75	-2.19	22.33	-0.14	7.57	-1.12	8.35	-0.46	9.21	-20.49	3.12	-17.13
	15.21	34.21	17.79	-2.16	23.32	-0.11	7.66	-1.19	8.21	-0.40	10.05	-15.98	3.08	-17.18
	15.23	35.1	17.50	-2.30	26.67	-0.10	7.62	-1.28	7.53	-0.09	10.02	-10.68	2.91	-17.52
	15.24	35.2	19.23	-2.28	29.65	-0.04	7.53	-1.36	7.93	0.23	11.32	-4.65	2.91	-17.83
	15.25	35.3	13.97	-2.23	18.68	0.15	5.60	0.18	6.44	-0.04	10.56	-3.08	2.76	-7.15
	15.26	35.4	13.43	-2.25	19.06	0.07	6.29	0.25	6.67	-0.11	10.38	-9.04	2.78	-6.75
	15.27	35.5	12.35	-2.20	19.58	0.11	5.98	0.17	6.50	-0.20	7.97	-14.96	2.76	-6.62
	15.28	35.6	11.51	-2.05	16.33	0.13	5.83	0.19	6.48	-0.30	7.73	-20.41	2.83	-6.92
	15.29	35.7	10.87	-2.00	15.27	0.01	6.12	0.22	6.86	-0.36	7.34	-26.21	2.81	-7.47
	15.30	35.8	10.80	-2.10	15.37	-0.18	5.99	0.24	6.93	-0.29	7.11	-32.16	2.83	-8.44
	15.31	35.9	10.43	-2.00	14.61	-0.13	6.28	0.21	7.10	-0.30	7.47	-37.81	2.68	-9.63
	15.32	35.10	10.36	-2.25	16.69	-0.16	5.75	0.21	6.60	-0.25	7.16	-43.72	2.55	-11.00
	15.33	35.11	11.20	-2.11	15.74	-0.13	6.21	0.20	7.14	-0.29	7.94	-50.01	2.39	-12.64
	15.34	35.12	11.95	-2.06	15.73	-0.13	6.47	0.22	7.50	-0.31	7.97	-57.08	2.15	-14.58
	15.35	35.13	12.95	-2.00	16.25	-0.10	6.64	0.22	7.73	-0.34	8.58	-64.95	2.18	-17.06
	15.36	35.14	12.38	-2.02	17.09	-0.12	6.55	0.24	7.54	-0.36	8.61	-71.96	2.35	-19.70
	15.37	35.15	12.77	-2.04	18.43	-0.16	6.83	0.25	7.54	-0.35	9.42	-79.92	2.27	-22.80

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
	15.38	35.16	13.84	-1.72	17.25	0.04	6.85	0.25	7.41	-0.44	10.48	-88.20	2.30	-26.15
	15.39	35.17	14.05	-1.78	17.91	0.08	6.88	0.25	7.34	-0.49	11.21	-95.96	2.27	-29.57
	15.40	35.18	16.05	-1.78	19.39	0.11	7.11	0.21	7.33	-0.49	11.04	-104.10	2.47	-33.35
	15.41	35.19	16.38	-1.79	18.51	0.13	6.99	0.19	7.25	-0.47	12.15	-107.70	2.29	-35.04
	15.42	35.20	14.64	-1.79	18.56	0.16	6.96	0.19	7.00	-0.44	12.62	-112.00	2.21	-37.23
	15.43	35.21	15.33	-1.83	18.84	0.20	6.97	0.18	7.16	-0.43	11.82	-116.60	2.29	-39.54
	15.44	35.22	15.77	-1.82	19.62	0.19	7.17	0.18	7.24	-0.42	12.72	-119.70	2.21	-41.30
	15.45	35.23	16.37	-1.85	20.42	0.18	7.24	0.19	7.43	-0.41	12.80	-124.40	2.29	-43.69
	15.46	35.24	16.08	-2.46	21.62	-0.35	7.51	0.31	7.67	-0.40	13.04	-129.60	2.10	-46.13
	15.47	35.25	16.14	-2.21	23.46	-0.23	7.76	0.31	7.97	-0.39	14.18	-133.20	2.41	-48.12
	15.48	35.26	17.23	-2.21	24.87	-0.24	7.92	0.33	7.98	-0.37	13.73	-136.70	2.44	-50.21
	15.49	35.27	16.04	-2.27	24.62	-0.33	8.04	0.38	8.30	-0.37	14.67	-140.80	2.50	-52.56
		35.28												
	15.50	35.29	16.92	-2.29	26.16	-0.34	8.23	0.47	32.78	-0.34	39.27	-146.10	12.59	-57.57
	15.51	35.30	18.43	-2.18	27.68	-0.39	8.83	0.46	9.17	-0.32	16.45	-153.30	2.58	-62.29
	15.54	36.1	19.56	-1.35	30.36	-0.26	8.94	0.52	9.83	-0.35	17.66	-160.00	2.47	-67.30
		36.2												
	15.55	37.1	20.67	-1.30	32.95	-0.12	9.09	0.52	9.79	-0.26	19.32	-166.70	2.76	-72.21
	15.57	38.1	15.88	-1.43	18.05	-0.03	6.93	0.33	7.87	-0.42	11.01	-105.40	2.21	-34.16
	15.58	38.2	23.87	-0.26	40.57	-0.10	8.04	-0.79	7.44	-0.87	14.92	-189.00	2.67	-80.93
	15.59	38.3	35.04	-2.80	53.87	0.33	10.72	-0.33	8.40	0.62	17.50	6.87	5.31	-17.31
	15.60	38.4	36.48	-2.51	46.15	0.12	11.07	0.02	9.94	0.53	19.94	1.50	5.62	-15.63
	15.61	38.5	25.99	-2.15	32.46	0.28	8.55	-0.31	6.79	0.80	12.75	-12.21	4.26	-17.25
	15.62	38.6	26.92	-2.16	32.64	0.21	9.19	-0.05	7.34	0.63	8.81	-20.41	4.63	-17.47
	15.63	38.7	22.74	-1.98	30.26	0.27	7.97	-0.24	6.53	0.27	8.06	-32.39	4.40	-17.56
	15.64	38.8	22.08	-2.08	30.58	-0.14	8.40	-0.22	7.32	0.07	10.43	-39.30	4.29	-18.06
	15.65	38.9	21.19	-2.05	32.02	-0.30	8.47	-0.24	7.24	-0.12	8.62	-48.33	4.24	-19.02
	15.66	38.10	23.42	-2.00	33.64	-0.31	8.16	-0.27	7.42	-0.28	8.80	-58.08	4.43	-20.88
	15.67	38.11	22.88	-1.98	35.17	-0.19	7.83	-0.25	6.58	-0.32	8.77	-67.36	4.24	-23.20
	15.68	38.12	25.29	-1.86	34.67	-0.24	7.56	-0.33	7.05	-0.43	8.84	-77.24	4.12	-26.28
	15.69	38.13	31.15	-1.76	37.38	-0.38	8.12	-0.70	8.13	-0.60	9.59	-88.42	4.58	-30.40
	15.70	38.14	33.19	-1.47	38.68	-0.21	8.06	-0.91	8.60	-0.62	9.31	-97.99	4.81	-34.51
	15.71	38.15	33.06	-1.41	40.29	-0.25	7.98	-0.86	8.29	-0.72	9.90	-110.10	4.66	-39.85
	15.72	38.16	34.83	-1.33	41.62	-0.46	8.24	-0.86	8.95	-0.79	11.39	-122.80	4.89	-45.45

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
	15.73	38.17	35.67	-1.25	44.07	-0.36	7.76	-0.88	8.97	-0.77	10.94	-134.90	4.80	-51.64
	15.74	38.18	36.84	-0.93	45.13	-0.41	8.05	-0.78	9.19	-0.71	11.46	-147.30	5.17	-58.33
	15.75	38.19	38.28	-0.79	46.03	-0.36	8.00	-0.67	9.45	-0.53	11.65	-160.40	5.23	-65.97
	15.76	38.20	39.14	-0.64	46.08	-0.47	8.74	-0.50	9.55	-0.41	12.80	-174.90	5.61	-74.50
	15.77	38.21	38.17	-0.04	51.76	-0.31	8.78	-0.49	9.79	-0.28	12.69	-185.50	5.82	-82.31
	15.78	38.22	32.06	-1.66	40.15	-0.32	8.06	-0.82	9.23	-0.22	9.66	-108.00	4.58	-40.09
	15.80	39.1	25.12	-2.70	30.43	-0.18	9.47	-0.01	7.55	0.87	11.73	-2.06	4.27	-18.75
	15.81	39.2	31.31	-1.95	37.56	-0.56	8.61	-0.66	8.38	-0.60	10.49	-98.53	4.72	-34.44
	15.82	39.3	25.45	-2.51	38.54	0.28	8.83	-0.44	6.20	0.74	13.66	-7.21	4.60	-17.97
	15.83	39.4	19.82	-2.02	31.11	0.22	8.34	-0.36	7.40	-0.18	9.60	-37.71	4.32	-17.54
	15.84	39.5	18.03	-1.92	28.25	-0.11	7.98	-0.60	7.22	-0.28	10.26	-55.03	4.32	-19.90
	15.85	39.6	20.62	-1.52	30.51	-0.02	7.57	-0.84	7.68	-0.67	9.42	-73.43	4.41	-24.75
	15.86	39.7	27.33	-1.11	42.47	-0.35	8.13	-1.14	9.49	-1.03	8.84	-101.50	4.80	-34.62
	15.87	39.8	26.83	-1.30	44.94	-0.40	7.49	-1.28	9.67	-1.12	9.26	-119.30	4.62	-42.56
	15.88	39.9	27.51	-0.88	46.39	-0.42	7.71	-1.23	9.17	-1.24	10.22	-142.70	4.82	-54.41
	15.89	39.10	29.51	-0.11	51.35	-0.42	8.42	-1.07	9.85	-1.06	11.36	-168.10	5.52	-69.35
	15.91	40.1	29.34	0.34	53.60	-0.71	8.87	-0.86	10.27	-0.86	13.69	-194.20	5.88	-86.54
	15.92	40.2	26.13	-2.02	44.18	-0.60	8.16	-1.07	9.53	-0.36	8.90	-110.80	4.74	-40.00
	16.1	41.1	30.20	-0.35	48.22	-0.15	7.40	-0.82	8.92	-1.04	10.68	-176.60	5.35	-71.37
	16.2	42.1	26.27	-0.19	46.77	-0.50	7.99	-0.80	9.03	-1.21	11.38	-172.10	5.35	-69.95
	16.3	42.2	12.66	-2.08	24.50	0.07	6.24	-0.74	6.26	-0.12	8.31	-59.27	4.32	-20.79
	16.4	42.3	12.27	-2.12	22.37	0.22	6.40	-0.24	5.61	-0.48	10.12	-60.88	4.20	-20.02
	16.5	42.4	12.09	-2.17	20.18	0.19	5.56	0.05	5.69	-0.51	8.52	-24.08	3.80	-19.30
	16.6	42.5	11.28	-2.10	19.68	0.10	5.88	0.14	6.50	-0.36	9.73	-23.97	3.78	-17.48
	16.7	42.6	10.91	-2.19	17.99	0.11	6.50	0.27	5.53	-0.19	8.61	-25.74	3.44	-15.88
	16.8	42.7	12.15	-2.02	20.15	0.01	7.33	0.32	6.46	-0.25	9.86	-56.21	3.56	-21.47
	16.9	42.8	13.97	-1.96	23.25	0.00	7.62	0.29	6.61	-0.38	12.43	-78.35	3.70	-27.23
	16.10	42.9	15.59	-1.83	24.99	-0.14	7.97	0.45	6.73	-0.47	13.41	-98.53	3.74	-34.20
	16.11	42.10	17.37	-1.83	27.30	-0.09	8.66	0.43	6.78	-0.35	13.17	-116.00	4.08	-43.05
	16.12	42.11	18.78	-1.92	30.74	-0.22	9.23	0.46	7.54	-0.23	14.70	-131.30	4.50	-51.76
	16.13	42.12	20.90	-1.89	35.38	-0.39	9.84	0.51	8.37	-0.20	17.60	-148.50	4.95	-61.53
	16.14	42.13	23.29	-1.95	41.60	-0.34	10.40	0.55	8.68	-0.12	19.26	-155.60	5.14	-66.31
	16.15	42.14	10.64	-2.37	16.13	-0.26	6.56	0.36	6.22	-0.11	8.81	-28.07	3.41	-15.42
	16.16	42.15	10.02	-2.18	13.91	-0.15	6.58	0.35	6.51	0.08	10.06	-47.53	3.38	-13.88

Hub Fixed Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Fixed Bal. Fx Vibratory lb.	Hub Fixed Bal. Fx Mean lb.	Hub Fixed Bal. Fy Vibratory lb.	Hub Fixed Bal. Fy Mean lb.	Hub Fixed Bal. Mx Vibratory in.-lb.	Hub Fixed Bal. Mx Mean in.-lb.	Hub Fixed Bal. My Vibratory in.-lb.	Hub Fixed Bal. My Mean in.-lb.	Hub Fixed Bal. Fz Vibratory lb.	Hub Fixed Bal. Fz Mean lb.	Hub Fixed Bal. Mz Vibratory in.-lb.	Hub Fixed Bal. Mz Mean in.-lb.
	16.17	42.16	11.49	-2.25	15.16	-0.05	6.47	0.26	6.36	0.17	8.08	-47.41	3.04	-14.02
	16.18	42.17	11.58	-2.25	17.56	-0.03	6.34	0.17	5.83	0.15	7.85	-44.29	2.90	-14.77
	16.19	42.18	11.35	-2.25	18.29	-0.14	6.21	0.17	5.95	0.15	9.37	-59.07	2.89	-18.14
	16.20	42.19	12.36	-2.28	20.35	-0.24	6.14	0.29	5.97	0.06	9.60	-71.13	2.97	-22.24
	16.21	42.20	12.97	-2.29	20.93	-0.24	6.42	0.28	6.22	0.06	11.38	-79.26	2.71	-26.45
	16.22	42.21	13.37	-2.07	23.56	-0.35	6.98	0.35	6.78	0.06	10.65	-87.45	3.03	-30.76
	16.23	42.22	14.05	-2.18	23.54	-0.52	7.37	0.46	6.69	0.11	10.53	-94.60	2.91	-35.13
	16.24	42.23	15.85	-2.05	30.42	-0.55	8.20	0.38	6.83	0.28	13.56	-102.60	3.05	-41.05
	16.25	42.24	18.35	-1.17	36.91	-0.27	9.64	0.15	7.57	0.32	16.44	-109.80	3.27	-48.82
	16.26	42.25	21.77	-1.22	44.33	-0.18	11.15	1.02	7.84	0.84	18.14	-116.00	3.75	-56.99
			25.06	-1.25	50.93	-0.16	10.86	0.51	8.25	0.75	21.74	-123.30	4.54	-66.67
49	12.67													
64	12.91		21.83	0.00	21.83	-21.01	1.14	0.00	1.12	0.00	1.06	1.22	0.60	-0.27
82	13.28		21.67	0.00	21.69	-21.00	0.56	-0.01	0.58	0.00	0.85	2.72	0.48	-0.10
94	13.57		21.58	-0.02	21.59	-20.98	0.75	-0.01	0.76	0.00	0.85	5.00	0.51	-0.02
94	13.58		21.83	-0.02	21.78	-21.00	1.22	0.00	1.20	0.00	1.01	6.99	0.63	0.04
108	13.71		21.75	-0.01	21.75	-21.00	1.18	0.00	1.19	0.00	1.07	6.66	0.60	0.05
	13.97		21.12	0.00	21.17	-21.01	0.67	0.00	0.66	0.00	1.01	7.44	0.48	-0.19
138	14.17		21.50	0.01	21.45	-21.00	0.70	0.00	0.71	0.00	1.12	3.36	0.51	0.06
	15.79		21.83	0.01	21.74	-21.01	0.55	0.00	0.55	0.00	0.37	1.86	0.26	-0.21
	15.90		21.28	0.00	21.24	-21.01	0.41	0.00	0.40	0.00	0.74	2.95	0.43	0.08
	15.93		21.56	0.00	21.60	-21.01	0.57	0.00	0.58	0.00	1.12	3.63	0.54	0.02
			21.86	-0.01	21.80	-20.98	0.58	-0.01	0.63	0.00	0.74	4.32	0.37	0.01

APPENDIX G

Hub Rotating Balance Loads

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
		24.1								
		24.2								
2	12.2	25.1	28.83	-18.06	48.82	-6.15	9.86	0.16	6.72	-3.25
	12.3	25.2	37.50	-18.15	51.60	-5.81	10.37	-0.38	8.23	-3.15
	12.4		34.79	-17.42	52.16	-4.93	11.53	-0.79	7.74	-3.31
8	12.5	25.3	36.20	-17.13	59.28	-4.61	12.45	-0.31	7.68	-3.33
9	12.6	25.4	38.09	-16.92	59.02	-4.25	10.53	-0.84	8.69	-3.19
10	12.7	25.5	39.18	-16.99	58.15	-4.05	7.81	-1.31	9.70	-3.40
11	12.8	25.6	36.07	-16.41	59.93	-5.38	13.98	-0.11	6.25	-3.02
12	12.9	25.7	33.87	-16.68	55.53	-5.83	14.67	0.00	7.18	-2.98
18	12.10	28.8	34.40	-17.16	57.49	-5.56	11.79	-0.36	7.62	-2.99
19	12.11	25.9	36.53	-16.67	59.65	-4.99	9.27	-1.01	8.45	-2.96
20	12.12	25.10	38.71	-17.00	59.97	-4.73	6.86	-0.89	11.20	-3.06
21	12.13	25.11	34.72	-16.85	55.21	-5.67	13.64	-0.37	7.70	-2.88
22	12.14	25.12	35.91	-16.52	56.08	-5.80	15.56	-0.39	9.10	-2.99
26	12.15	25.13	34.54	-17.32	56.19	-5.16	11.44	-0.39	7.87	-3.01
27	12.16	25.14	36.24	-17.25	57.82	-5.17	10.72	-0.68	6.53	-2.92
28	12.17	25.15	37.24	-17.21	56.97	-5.38	11.68	-0.44	8.86	-3.00
1	12.18	25.16	29.81	-17.13	47.29	-5.75	12.12	-0.28	6.75	-3.38
	12.19	25.17	27.26	-17.51	44.99	-5.74	10.88	-0.45	6.61	-3.35
	12.20	25.18	27.36	-18.17	43.12	-5.98	9.82	-0.42	6.25	-3.31
	12.21	25.19	26.85	-17.22	43.87	-5.59	10.28	-0.42	6.27	-3.23
	12.22	25.20	31.87	-16.92	43.49	-5.49	10.56	-0.57	6.64	-3.23
	12.23	25.21	40.08	-18.78	53.31	-6.91	13.83	-1.04	7.56	-2.99
3	12.24	25.22	34.35	-18.78	45.27	-8.56	14.79	-1.37	5.85	-3.09
4	12.25	25.23	33.99	-18.34	46.36	-8.30	13.28	-1.22	6.06	-2.69
5	12.26	25.24	43.96	-18.21	51.78	-7.82	12.09	-1.25	9.31	-3.13
6	12.27	25.25	36.86	-18.95	41.58	-9.32	14.97	-0.94	6.83	-3.21
7	12.28	25.26	38.96	-19.56	41.62	-9.97	15.28	-0.75	8.57	-3.29

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
13	12.29	25.27	34.02	-19.02	44.56	-8.67	14.39	-1.15	5.75	-3.36
14	12.30	25.28	35.51	-18.98	41.52	-8.94	12.43	-0.77	6.17	-2.89
15	12.31		41.74	-18.91	45.92	-9.68	12.88	-0.84	9.46	-3.07
16	12.32	25.29	36.73	-19.24	45.70	-9.20	15.74	-0.97	7.64	-3.32
17	12.33	25.30	34.92	-19.64	42.43	-8.86	16.22	-0.90	9.52	-3.56
23	12.34	25.31	34.94	-18.90	45.16	-8.77	14.58	-1.14	5.81	-3.56
24	12.35	25.32	34.77	-19.13	40.79	-9.04	11.33	-0.66	6.73	-3.53
25	12.36	25.33	36.26	-19.55	42.36	-8.59	15.76	-0.82	7.01	-3.30
30	12.37	25.34	52.69	-17.78	58.29	-8.27	11.10	0.11	7.89	-3.02
	12.38	25.35	54.28	-17.46	62.49	-7.88	11.95	-0.20	8.71	-3.04
	12.39	25.36	56.07	-18.26	63.63	-7.61	12.23	-0.33	9.84	-3.07
	12.40	25.37	51.33	-17.87	67.42	-6.93	12.98	-0.49	9.70	-3.25
35	12.42	26.1	19.97	-11.07	24.25	-7.66	4.74	-0.56	4.84	-2.42
	12.43	26.2	19.70	-11.33	25.61	-6.99	5.07	-0.72	4.74	-2.45
	12.44	26.3	25.33	-11.47	26.45	-6.62	5.36	-0.90	5.54	-2.53
	12.45	26.4	29.54	-11.61	30.99	-5.91	5.94	-1.18	6.34	-2.59
	12.46	26.5	35.89	-11.49	36.35	-5.82	7.13	-1.39	8.04	-2.60
		26.6								
36	12.47	26.7	22.78	-10.94	26.18	-6.71	4.13	-0.57	5.19	-2.31
	12.48	26.8	27.06	-11.20	28.22	-6.15	5.00	-0.87	5.95	-2.28
	12.49	26.9								
	12.50	26.10	34.07	-11.40	30.47	-5.63	5.64	-1.21	6.73	-2.35
	12.51	26.11	42.54	-11.64	36.19	-5.38	7.16	-1.50	8.17	-2.42
	12.52	26.12	48.12	-11.79	42.85	-5.15	7.95	-1.69	9.26	-2.52
37	12.53	26.13	35.79	-11.32	38.30	-5.15	7.93	-1.28	7.13	-2.59
38	12.54	26.14	38.80	-11.14	42.02	-4.91	6.33	-1.71	6.70	-2.57
39	12.55	26.15	46.92	-11.07	47.47	-5.22	6.58	-1.64	7.93	-2.57
40	12.56	26.16	34.60	-11.18	40.88	-5.83	9.22	-0.98	7.01	-2.45
41	12.57	26.17	28.39	-10.78	39.39	-6.43	10.61	-0.86	7.10	-2.41

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
42	12.58	26.18								
	12.59	26.19								
	12.60	26.20	36.44	-11.24	37.89	-5.13	7.65	-1.30	7.00	-2.50
43	12.61	26.21	40.01	-11.27	42.21	-5.23	5.12	-1.41	7.02	-2.43
44	12.62	26.22	41.34	-10.92	44.51	-5.08	6.48	-1.40	9.40	-2.49
45	12.63	26.23	35.25	-11.36	39.86	-5.47	9.90	-1.11	7.49	-2.42
47	12.64	26.24	34.21	-11.00	37.02	-5.37	7.81	-1.25	6.52	-2.54
48	12.65	26.25	34.77	-10.98	37.22	-4.99	6.66	-1.51	4.16	-2.49
49	12.66	26.26	37.98	-11.11	43.29	-5.79	10.04	-1.22	9.73	-2.34
51	12.68	27.1	14.70	-12.96	15.10	-5.92	4.14	-1.26	4.91	-3.51
	12.69	27.2	15.58	-12.82	13.58	-5.19	4.12	-1.46	5.55	-3.46
	12.70	27.3	16.57	-12.85	12.19	-4.59	4.03	-1.76	5.38	-3.55
	12.71	27.4	17.84	-12.72	11.33	-4.05	4.40	-1.97	6.09	-3.57
	12.72	27.5	22.68	-12.83	14.06	-3.92	4.23	-2.34	6.07	-3.66
	12.73	27.6	26.95	-12.40	22.74	-3.63	5.52	-2.76	6.05	-4.00
	12.74	27.7	34.02	-12.12	31.06	-3.57	7.14	-2.96	6.84	-4.00
	12.75	27.8	39.90	-12.07	35.38	-3.78	7.41	-3.31	7.20	-4.12
50	12.76	27.9	17.42	-12.16	18.81	-5.81	6.98	-2.22	5.04	-3.71
	12.77	27.10	17.94	-12.33	16.58	-5.29	5.82	-2.25	5.97	-3.77
	12.78	27.11	22.36	-12.56	17.95	-5.17	6.22	-2.38	6.68	-3.85
52	12.79	27.12	17.76	-12.32	18.37	-5.53	6.38	-2.25	5.87	-3.79
53	12.80	27.13	18.70	-12.20	15.80	-5.14	5.84	-2.52	5.23	-3.68
54	12.81	27.14	27.10	-12.29	17.41	-5.20	6.68	-2.34	6.95	-3.68
		27.15								
55	12.82	27.16	16.13	-12.16	20.43	-6.08	7.50	-2.08	5.98	-3.62
57	12.83	27.17	17.59	-12.45	16.60	-5.37	5.78	-2.02	6.17	-3.54
58	12.84	27.18	17.87	-11.92	16.83	-5.30	4.86	-2.19	5.24	-3.53
		27.19								
59	12.85	27.20	19.40	-11.73	18.76	-5.99	6.96	-1.34	7.28	-3.11

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
60	12.86	27.21	15.65	-12.59	17.83	-5.90	6.94	-1.36	7.37	-3.12
62	12.87	27.22								
	12.88	27.23	17.83	-12.71	14.70	-5.83	5.54	-1.21	6.10	-3.05
63	12.89	27.24	15.93	-12.30	12.45	-5.82	3.27	-1.36	3.57	-3.12
64	12.90	27.25	19.36	-12.17	17.53	-6.02	7.88	-1.34	7.73	-3.04
66	13.1	28.1	58.47	-17.86	68.10	-5.95	8.74	0.24	6.82	-5.71
	13.3	28.2	21.32	-17.40	34.77	-5.15	8.48	0.11	5.33	-5.75
	13.4	28.3	17.89	-17.39	29.46	-4.69	8.25	-0.25	4.38	-5.82
	13.5	28.4	27.44	-16.60	33.05	-4.04	8.93	-0.73	5.00	-5.87
	13.6	28.5	32.60	-16.74	38.58	-4.44	9.70	-0.90	5.63	-5.73
65	13.7	28.6	41.70	-18.33	54.47	-7.17	12.37	0.01	10.00	-5.69
	13.8	28.7	40.90	-18.42	54.41	-6.20	12.36	-0.15	10.02	-5.71
	13.9	28.8	42.80	-18.11	50.38	-5.72	11.67	-0.33	9.88	-5.74
	13.10	28.9	42.46	-17.87	51.51	-5.67	11.91	-0.41	9.57	-5.59
	13.11	28.10	43.57	-18.32	54.50	-6.85	12.44	-1.01	7.82	-5.32
67	13.12	28.11	48.12	-19.41	50.75	-9.21	14.91	-0.71	7.99	-5.02
68	13.13	28.12	48.21	-19.21	53.99	-8.45	14.49	-0.67	7.90	-4.95
69	13.14	28.13	46.69	-18.62	53.78	-7.81	12.71	-0.92	8.12	-4.95
70	13.15	28.14	47.45	-19.39	46.54	-10.03	14.35	-0.69	7.66	-4.83
71	13.16	28.15	47.72	-19.26	48.58	-9.66	14.38	-0.55	7.43	-4.71
72	13.17	28.16	44.43	-18.74	49.98	-8.21	14.30	-0.72	8.97	-4.61
73	13.18	28.17	45.09	-18.30	51.12	-8.32	13.57	-0.56	9.63	-4.30
74	13.19	28.18	47.46	-18.38	51.80	-8.05	12.44	-0.86	10.59	-4.13
75	13.20	28.19	45.83	-18.63	52.15	-8.16	14.30	-0.97	7.62	-4.27
76	13.21	28.20	47.78	-18.65	53.07	-8.42	15.42	-1.00	7.62	-4.28
77	13.22	28.21	45.40	-18.11	49.92	-8.25	14.28	-1.11	8.97	-3.95
78	13.23	28.22	42.48	-17.77	51.83	-8.42	11.72	-1.13	8.17	-4.25
79	13.24	28.23	49.46	-18.30	50.09	-8.46	16.57	-0.90	8.94	-4.07
80	13.25	28.24	56.05	-18.69	61.28	-8.98	13.24	-0.88	9.34	-3.94

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
81	13.26	28.25	56.09	-17.96	60.88	-8.48	12.84	-0.99	9.51	-3.90
82	13.27	28.26	34.61	-17.55	40.97	-6.68	10.21	-0.67	7.82	-3.97
80A	13.29	29.1	17.69	-6.00	26.82	-5.05	4.66	-0.09	4.82	-1.59
	13.30	29.2	18.09	-5.99	25.32	-4.78	5.00	-0.22	4.73	-1.57
	13.31	29.3	19.24	-6.15	26.25	-4.48	5.47	-0.34	5.17	-1.58
	13.32	29.4	19.90	-6.21	24.62	-4.35	5.47	-0.45	5.56	-1.57
	13.33	29.5	20.14	-6.20	23.45	-4.13	5.57	-0.58	5.88	-1.59
		29.6								
81A	13.34	29.7	13.96	-5.76	14.95	-5.25	3.94	0.07	4.34	-1.35
	13.35	29.8	13.81	-5.67	17.91	-5.10	4.34	-0.01	4.69	-1.42
	13.36	29.9	11.26	-5.83	16.37	-4.88	4.38	-0.23	4.08	-1.43
	13.37	29.10	11.63	-5.97	16.21	-4.54	4.44	-0.37	4.11	-1.46
	13.38	29.11	12.02	-6.11	15.22	-4.18	4.47	-0.55	4.14	-1.50
	13.39	29.12	13.50	-6.23	12.71	-4.01	4.46	-0.70	4.55	-1.47
	13.40	29.13	14.09	-6.31	11.15	-3.63	4.38	-0.87	4.48	-1.53
	13.41	29.14	15.00	-6.36	10.61	-3.24	4.25	-1.03	4.59	-1.59
	13.42	29.15	18.08	-6.49	11.96	-3.41	4.87	-1.04	5.86	-1.44
81B	13.43	29.16	21.56	-5.76	18.78	-4.32	6.12	-0.08	5.11	-1.55
	13.44	29.17	19.20	-6.19	18.24	-3.59	5.40	-0.56	4.91	-1.67
	13.45	29.18	15.39	-6.56	14.68	-2.53	5.28	-1.29	4.68	-1.83
	13.46	29.19	30.91	-7.09	28.46	-1.73	8.58	-2.12	7.60	-1.93
	13.47	29.20	39.54	-7.23	37.30	-1.59	9.34	-2.44	8.45	-1.96
	13.48	29.21	38.53	-7.44	37.18	-1.31	9.83	-2.79	9.37	-2.05
87	13.49	29.22	15.90	-5.86	15.71	-3.21	5.28	-1.06	4.49	-1.59
88	13.50	29.23	24.45	-5.79	20.62	-3.45	5.49	-0.85	5.47	-1.55
89	13.51	29.24	25.32	-5.86	23.42	-3.77	7.97	-0.81	7.66	-1.58
90	13.52	29.25	21.58	-5.86	16.17	-3.84	7.13	-0.83	7.17	-1.50
91	13.53	29.26	19.25	-5.60	16.54	-3.38	9.56	-0.98	9.64	-1.57
92	13.54	29.27	17.36	-5.83	15.10	-3.61	5.33	-0.97	4.78	-1.60

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
93	13.55	29.28	20.55	-6.13	19.03	-3.71	4.44	-0.81	4.52	-1.56
94	13.56	29.29	24.87	-6.12	19.31	-3.65	7.73	-0.81	7.17	-1.55
		30.1								
95	13.59	30.2	39.81	-7.42	34.56	-3.41	7.30	-0.96	6.25	-2.77
	13.60	30.3	41.42	-7.02	32.26	-2.44	9.06	-1.83	6.29	-2.74
	13.61	30.4	38.06	-6.56	28.68	-2.87	7.66	-1.42	6.23	-2.66
101	13.62	30.5	37.39	-6.47	31.47	-3.38	7.13	-0.98	6.62	-2.65
95A	13.63	30.6	40.81	-6.76	31.93	-2.59	8.94	-1.76	6.33	-2.73
101A	13.64	30.7	35.42	-6.54	31.38	-3.36	7.37	-1.02	6.93	-2.67
102	13.65	30.8	43.99	-6.52	43.78	-3.74	7.77	-0.75	8.01	-2.56
103	13.66	30.9	50.68	-6.00	45.24	-3.49	10.57	-0.88	9.90	-2.59
104	13.67	30.10	36.90	-6.29	29.05	-3.41	8.22	-0.74	8.44	-2.53
106	13.68	30.11	36.88	-6.28	31.22	-3.22	7.39	-0.73	6.41	-2.57
107	13.69	30.12	40.52	-5.93	39.03	-3.16	6.82	-0.75	8.09	-2.56
108	13.70	30.13	40.55	-7.35	35.86	-3.90	10.60	-0.61	10.46	-2.62
109	13.72	31.1	20.84	-7.13	17.67	-3.74	5.83	-0.53	5.50	-2.18
110	13.73	31.2	27.29	-7.04	23.79	-4.18	6.04	-0.49	6.04	-2.23
111	13.74	31.3	31.85	-6.39	28.46	-4.52	8.03	-0.53	7.40	-2.27
112	13.75	31.4	21.86	-6.38	17.40	-3.82	6.51	-0.62	5.97	-2.27
113	13.76	31.5	19.61	-6.27	17.35	-3.34	8.92	-0.80	8.83	-2.31
114	13.77	31.6	47.32	-6.49	38.47	-0.38	8.64	-1.84	6.89	-2.33
115	13.78	31.7	61.54	-6.75	46.66	-0.69	9.81	-1.99	9.50	-2.34
116	13.79	31.8	64.14	-6.42	47.00	-0.10	10.61	-2.11	10.17	-2.34
117	13.80	31.9	44.32	-6.34	39.25	-0.90	9.54	-2.03	8.54	-2.26
118	13.81	31.10	48.38	-7.43	45.01	-1.55	12.57	-1.99	11.64	-2.30
128	13.82	31.11	49.82	-5.15	39.13	-1.54	8.45	-1.79	6.59	-2.10
129	13.83	31.12	58.08	-5.74	44.38	-1.66	9.27	-1.86	8.69	-2.15
130	13.84	31.13	62.76	-5.92	49.81	-1.45	10.63	-1.93	9.94	-2.20
123	13.85		48.10	-6.40	45.23	-2.20	9.20	-1.77	7.40	-2.14

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
122	13.86	31.14	43.68	-6.38	41.90	-2.58	8.24	-1.67	6.50	-2.09
124	13.87	31.15	36.62	-6.42	37.61	-2.90	9.99	-1.85	8.29	-1.94
122A	13.88	31.16	34.11	-6.06	29.96	-3.98	7.74	-0.73	7.15	-1.96
122B	13.89		41.30	-6.59	37.51	-2.81	9.50	-1.74	6.61	-1.99
124A	13.90	31.17	43.35	-7.56	43.36	-2.28	9.07	-2.38	8.30	-2.20
125	13.91	31.18	20.14	-6.65	19.86	-4.14	6.78	-1.11	5.42	-2.11
126	13.92		24.40	-7.03	20.90	-4.60	5.09	-0.77	4.81	-2.18
127	13.93	31.19	26.95	-7.22	25.93	-4.68	5.68	-0.83	5.22	-2.21
119	13.94	31.20	16.53	-7.13	17.31	-4.27	5.98	-0.98	4.70	-2.16
120	13.95	31.21	21.22	-6.19	20.87	-5.42	6.57	0.06	6.14	-2.06
121	13.96	31.22	24.46	-7.58	22.29	-3.63	6.59	-1.67	6.06	-2.25
131	14.1	32.1	9.85	-7.41	10.25	-4.43	4.70	-0.71	4.22	-2.30
132	14.2		10.77	-7.42	11.35	-4.35	4.26	-0.83	3.53	-2.30
133	14.3	32.2	13.92	-7.42	17.56	-4.37	3.51	-0.87	3.57	-2.32
133A	14.4	32.3	16.77	-7.36	22.04	-4.27	5.28	-0.94	4.94	-2.41
134	14.5	32.4	7.54	-6.99	10.45	-4.12	6.20	-0.89	6.04	-2.43
135	14.6	32.5	7.90	-6.80	8.09	-4.14	7.57	-0.84	7.80	-2.42
139	14.7	32.6	8.68	-6.77	11.61	-4.19	5.07	-0.79	4.23	-2.36
140	14.8	32.7	13.17	-7.08	15.40	-4.34	3.08	-0.94	3.01	-2.44
141	14.9	32.8	15.61	-6.86	17.99	-4.18	4.64	-1.01	4.24	-2.44
142	14.10	32.9	7.20	-6.79	10.73	-4.12	6.43	-0.88	6.09	-2.46
143	14.11	32.10	6.51	-7.04	9.40	-3.93	7.89	-0.80	7.80	-2.41
136	14.12	32.11	8.44	-7.14	12.19	-3.98	5.05	-0.79	4.11	-2.34
137	14.13	32.12	11.54	-6.56	17.58	-4.94	4.72	-0.32	4.34	-2.35
138	14.14	32.13	11.17	-7.37	7.93	-3.48	4.79	-1.08	4.14	-2.47
		33.1								
		33.2								
		33.3								
	15.1	34.1								

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
	15.2	34.2								
	15.3	34.3	31.70	-12.31	33.71	-6.71	7.58	0.33	6.78	-4.26
	15.4	34.4	11.05	-11.63	12.35	-5.40	5.72	0.14	5.39	-4.13
	15.5	34.5	10.04	-11.74	10.12	-5.29	5.25	0.18	4.87	-4.06
	15.6	34.6	8.58	-11.72	8.78	-5.14	5.06	0.10	4.77	-4.02
	15.7	34.7	8.71	-11.85	8.52	-5.08	5.12	0.03	4.68	-4.00
	15.8	34.8	10.56	-12.08	9.40	-5.14	4.66	-0.06	3.61	-4.18
	15.9	34.9	10.95	-12.00	10.90	-4.87	4.37	-0.26	3.21	-4.11
	15.10	34.10	14.30	-11.71	14.20	-4.75	4.81	-0.36	3.27	-4.46
	15.11	34.11	14.74	-11.66	14.67	-4.76	4.94	-0.53	3.06	-4.53
	15.12	34.12	15.94	-11.52	17.00	-4.51	5.16	-0.73	3.60	-4.46
	15.13	34.13	16.22	-11.23	19.00	-4.16	5.22	-0.91	3.99	-4.41
	15.14	34.14	18.04	-10.51	19.93	-4.10	5.50	-1.23	4.39	-4.52
	15.15	34.15	18.84	-10.98	20.90	-3.80	6.09	-1.22	3.92	-4.65
	15.16	34.16	20.64	-10.97	22.12	-3.43	5.86	-1.42	4.19	-4.59
	15.17	34.17	21.64	-11.02	22.60	-3.21	5.40	-1.67	4.27	-4.57
	15.18	34.18	23.94	-11.07	24.72	-3.12	5.71	-1.99	4.89	-4.46
	15.19	34.19	26.84	-11.37	25.45	-3.40	5.87	-2.26	4.87	-4.53
	15.20	34.20	11.67	-9.82	11.90	-8.31	6.12	-0.09	4.41	-4.24
	15.21	34.21	13.49	-10.06	12.82	-8.64	6.15	-0.16	4.53	-4.14
	15.23	35.1	14.72	-10.53	13.65	-8.92	6.29	-0.28	4.02	-4.15
	15.24	35.2	15.95	-11.11	15.17	-9.28	6.16	-0.24	4.33	-4.08
	15.25	35.3	9.54	-10.26	8.76	-5.48	3.82	-0.10	4.34	-3.01
	15.26	35.4	10.07	-10.29	8.89	-5.49	4.10	-0.12	4.81	-3.02
	15.27	35.5	10.01	-10.30	9.37	-5.43	3.72	-0.06	4.85	-3.01
	15.28	35.6	7.44	-10.23	6.11	-5.29	3.67	-0.17	4.44	-3.00
	15.29	35.7	7.28	-10.27	5.78	-5.18	3.95	-0.22	4.82	-3.00
	15.30	35.8	7.93	-10.22	6.60	-5.12	4.17	-0.22	4.74	-2.99
	15.31	35.9	6.91	-10.16	6.82	-5.01	4.34	-0.27	5.03	-2.98

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
	15.32	35.10	8.20	-10.33	8.88	-5.03	4.02	-0.32	4.45	-3.09
	15.33	35.11	8.22	-10.27	9.27	-4.89	4.57	-0.32	5.12	-3.06
	15.34	35.12	8.92	-10.32	9.65	-4.62	4.84	-0.43	5.29	-3.10
	15.35	35.13	10.51	-10.43	10.07	-4.58	4.70	-0.52	5.29	-3.16
	15.36	35.14	10.35	-10.35	10.45	-4.37	4.60	-0.65	5.40	-3.21
	15.37	35.15	11.45	-10.44	11.99	-4.24	4.58	-0.79	5.55	-3.31
	15.38	35.16	10.79	-10.46	11.63	-4.18	4.55	-0.80	5.14	-3.32
	15.39	35.17	11.57	-10.48	12.70	-4.19	4.39	-0.84	5.11	-3.41
	15.40	35.18	13.59	-10.54	13.63	-4.10	4.49	-0.94	5.03	-3.50
	15.41	35.19	12.52	-10.59	13.96	-4.09	4.58	-1.00	5.06	-3.53
	15.42	35.20	13.01	-10.65	14.23	-4.00	4.48	-1.05	4.94	-3.54
	15.43	35.21	13.98	-10.65	14.78	-4.00	4.68	-1.13	5.07	-3.55
	15.44	35.22	14.47	-10.60	15.70	-3.93	4.82	-1.20	4.93	-3.57
	15.45	35.23	15.64	-10.65	16.71	-3.89	5.00	-1.29	5.10	-3.59
	15.46	35.24	16.76	-10.86	17.16	-3.81	5.01	-1.55	5.16	-3.79
	15.47	35.25	17.28	-10.94	18.34	-3.78	4.93	-1.59	5.42	-3.87
	15.48	35.26	17.64	-10.81	18.76	-3.63	5.11	-1.69	5.45	-3.86
	15.49	35.27	17.52	-10.76	19.10	-3.64	5.07	-1.84	5.79	-3.94
		35.28								
	15.50	35.29	27.60	-10.49	20.46	-3.98	30.73	-2.03	5.91	-3.84
	15.51	35.30	21.69	-10.55	21.29	-3.99	5.63	-2.19	6.29	-3.98
	15.54	36.1	22.53	-10.42	24.85	-4.10	6.59	-2.14	7.21	-3.83
		36.2								
	15.55	37.1	24.17	-10.46	26.28	-4.14	6.81	-2.32	7.18	-3.93
	15.57	38.1	10.40	-12.21	11.70	-3.96	4.97	-0.53	5.59	-3.34
	15.58	38.2	24.57	-16.19	21.64	-2.56	5.04	-2.68	3.80	-4.10
	15.59	38.3	31.49	-18.19	43.44	-8.80	7.92	-0.04	7.63	-4.17
	15.60	38.4	31.22	-18.30	32.59	-8.88	8.69	0.01	8.86	-4.15
	15.61	38.5	18.14	-17.77	17.95	-7.88	6.45	-0.12	5.30	-4.11

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
	15.62	38.6	15.28	-17.94	19.39	-7.94	6.42	-0.07	6.24	-3.98
	15.63	38.7	12.21	-18.12	9.15	-7.44	4.94	-0.21	5.12	-3.90
	15.64	38.8	13.67	-18.17	8.36	-7.36	5.50	-0.26	6.16	-3.91
	15.65	38.9	15.29	-18.39	7.17	-7.21	5.55	-0.29	6.09	-3.85
	15.66	38.10	17.02	-18.66	8.08	-7.11	5.33	-0.37	5.82	-3.88
	15.67	38.11	18.41	-18.93	10.76	-6.90	4.80	-0.51	5.32	-3.90
	15.68	38.12	20.14	-18.97	13.35	-7.05	5.06	-0.61	5.03	-3.93
	15.69	38.13	25.40	-18.83	18.93	-7.17	6.29	-0.71	5.87	-4.07
	15.70	38.14	27.76	-17.90	21.44	-6.77	7.15	-0.87	6.05	-4.04
	15.71	38.15	29.22	-17.82	24.43	-6.51	6.72	-1.02	5.84	-4.08
	15.72	38.16	30.62	-17.58	26.37	-5.89	7.60	-1.21	6.54	-4.13
	15.73	38.17	33.98	-17.46	29.06	-5.77	7.76	-1.33	6.87	-4.12
	15.74	38.18	36.30	-17.39	29.99	-5.19	7.83	-1.55	7.55	-4.14
	15.75	38.19	40.09	-17.06	31.18	-4.92	7.98	-1.80	7.32	-4.24
	15.76	38.20	43.16	-17.14	32.00	-4.65	8.05	-2.07	7.71	-4.34
	15.77	38.21	45.79	-17.26	31.85	-4.47	7.94	-2.35	7.70	-4.41
	15.78	38.22	28.77	-15.95	24.61	-5.96	7.50	-1.11	6.03	-4.17
	15.80	39.1	18.93	-14.17	18.69	-7.90	6.58	-0.17	7.04	-4.08
	15.81	39.2	27.10	-18.48	21.51	-7.12	6.64	-0.79	6.31	-4.00
	15.82	39.3	22.25	-16.77	21.78	-5.75	6.06	-0.41	5.25	-3.70
	15.83	39.4	14.49	-16.11	13.90	-5.05	5.88	-0.45	5.68	-3.61
	15.84	39.5	13.59	-16.21	9.78	-4.97	5.94	-0.52	5.32	-3.62
	15.85	39.6	13.84	-16.37	13.78	-4.97	6.52	-0.76	4.91	-3.67
	15.86	39.7	22.54	-16.59	25.58	-4.76	9.16	-0.96	6.77	-3.77
	15.87	39.8	24.09	-16.04	29.35	-4.29	9.36	-1.21	6.48	-3.86
	15.88	39.9	28.09	-15.81	29.21	-3.67	9.41	-1.64	6.92	-3.85
	15.89	39.10	31.89	-15.63	39.44	-2.99	9.95	-2.12	8.00	-3.83
	15.91	40.1	35.77	-15.59	45.34	-2.35	9.72	-2.81	8.16	-4.05
	15.92	40.2	24.81	-13.82	27.98	-3.49	9.01	-1.08	5.80	-4.00

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
	16.1	41.1	28.56	-17.02	33.21	-3.86	8.48	-2.09	6.80	-3.91
	16.2	42.1	27.47	-16.02	33.42	-3.56	8.77	-2.05	7.50	-3.66
	16.3	42.2	17.49	-6.47	12.03	-6.71	5.21	-0.79	4.24	-2.93
	16.4	42.3	18.58	-6.83	10.45	-4.91	3.91	-0.33	4.47	-3.23
	16.5	42.4	15.52	-8.02	9.43	-2.86	3.60	-0.27	4.20	-2.91
	16.6	42.5	15.52	-7.39	9.70	-3.49	4.44	-0.44	5.12	-2.80
	16.7	42.6	14.55	-7.22	9.43	-2.82	4.07	-0.57	5.30	-2.66
	16.8	42.7	14.99	-7.59	10.04	-2.71	4.79	-0.92	6.30	-2.73
	16.9	42.8	17.70	-7.67	11.76	-2.65	5.14	-1.15	6.40	-2.86
	16.10	42.9	19.69	-7.85	14.52	-2.35	5.15	-1.32	6.46	-2.88
	16.11	42.10	22.80	-7.88	17.66	-2.14	5.33	-1.62	6.56	-2.86
	16.12	42.11	27.51	-7.83	23.42	-2.04	5.87	-1.92	7.34	-2.88
	16.13	42.12	32.32	-7.94	31.50	-2.15	6.20	-2.19	8.16	-2.95
	16.14	42.13	38.28	-7.83	35.88	-2.19	6.90	-2.25	8.21	-2.93
	16.15	42.14	10.86	-7.10	8.54	-2.48	4.32	-0.52	5.83	-2.47
	16.16	42.15	10.17	-6.75	9.46	-3.41	4.18	-0.76	6.06	-2.57
	16.17	42.16	12.11	-6.33	9.06	-3.29	4.62	-0.73	5.82	-2.57
	16.18	42.17	13.14	-6.77	8.44	-2.95	4.80	-0.82	5.35	-2.57
	16.19	42.18	14.36	-7.00	10.28	-2.75	4.54	-0.97	5.51	-2.61
	16.20	42.19	15.79	-7.06	10.98	-2.84	4.49	-1.04	5.61	-2.64
	16.21	42.20	17.19	-7.06	12.41	-2.89	4.89	-1.17	6.04	-2.72
	16.22	42.21	19.13	-7.11	14.37	-2.97	5.54	-1.38	6.59	-2.79
	16.23	42.22	18.81	-6.91	17.25	-3.23	5.30	-1.57	6.13	-2.77
	16.24	42.23	22.59	-6.74	21.13	-4.41	5.46	-1.66	6.67	-3.00
	16.25	42.24	27.95	-6.05	29.57	-4.03	8.15	-1.70	7.97	-3.28
	16.26	42.25	37.52	-7.11	38.17	-2.82	8.22	-1.88	9.17	-3.20
			44.20	-8.95	44.33	-3.11	8.28	-2.47	9.36	-3.09

Hub Rotating Balance Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Hub Rot. Bal. Fx Vibratory lb.	Hub Rot. Bal. Fx Mean lb.	Hub Rot. Bal. Fy Vibratory lb.	Hub Rot. Bal. Fy Mean lb.	Hub Rot. Bal. Mx Vibratory in.-lb.	Hub Rot. Bal. Mx Mean in.-lb.	Hub Rot. Bal. My Vibratory in.-lb.	Hub Rot. Bal. My Mean in.-lb.
49	12.67									
64	12.91		21.33	0.63	21.38	21.56	0.26	-0.57	0.17	0.87
82	13.28		21.29	-1.48	21.26	21.25	0.13	-0.16	0.14	0.46
94	13.57		21.36	0.00	21.31	21.27	0.18	0.01	0.14	0.65
94	13.58		21.40	1.29	21.38	21.44	0.16	0.23	0.14	1.06
108	13.71		21.38	1.28	21.35	21.44	0.16	0.23	0.15	1.04
	13.97		21.36	0.38	21.34	20.72	0.16	0.14	0.12	0.53
138	14.17		21.33	0.42	21.38	21.24	0.19	-0.23	0.17	0.58
	15.79		21.22	0.49	21.25	21.57	0.10	-0.10	0.09	0.48
	15.90		21.27	-0.87	21.37	20.95	0.14	-0.25	0.13	-0.14
	15.93		21.27	-20.42	21.34	5.58	0.14	0.01	0.15	0.47
			21.21	3.56	21.34	21.29	0.12	0.16	0.12	0.46

APPENDIX H

Accelerometer Data

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
		24.1												
		24.2												
2	12.2	25.1	0.460	-0.005	0.903	-0.008	0.538	-0.006	0.518	-0.012	1.651	-0.004	0.864	0.005
	12.3	25.2	0.498	0.000	0.873	-0.006	0.497	0.000	0.488	-0.010	2.067	-0.001	0.779	0.008
	12.4		0.433	-0.001	0.830	-0.006	0.635	-0.001	0.501	-0.005	1.830	-0.004	0.730	0.009
8	12.5	25.3	0.529	0.001	1.047	-0.008	0.786	-0.005	0.653	-0.014	1.993	-0.003	0.998	0.006
9	12.6	25.4	0.508	0.000	1.043	-0.005	0.727	-0.001	0.623	-0.012	2.194	-0.002	0.975	0.009
10	12.7	25.5	0.523	-0.002	1.064	-0.006	0.712	-0.003	0.560	-0.002	2.249	-0.005	1.023	0.008
11	12.8	25.6	0.539	0.000	1.160	-0.008	0.852	-0.006	0.663	-0.008	1.900	-0.001	1.175	0.002
12	12.9	25.7	0.630	0.003	1.270	-0.005	0.890	-0.001	0.621	-0.001	2.060	-0.001	1.170	0.001
18	12.10	28.8	0.501	0.000	0.990	-0.008	0.630	-0.003	0.475	-0.012	2.038	-0.003	0.952	0.006
19	12.11	25.9	0.521	-0.001	1.132	-0.009	0.680	-0.001	0.520	-0.010	2.148	-0.006	1.077	0.010
20	12.12	25.10	0.519	-0.001	1.292	-0.008	0.718	0.002	0.611	-0.003	2.262	-0.003	1.150	0.010
21	12.13	25.11	0.504	-0.002	0.974	-0.007	0.780	-0.002	0.513	-0.010	1.908	-0.006	1.000	0.005
22	12.14	25.12	0.520	-0.001	1.032	-0.007	0.890	-0.006	0.694	-0.016	1.914	-0.004	1.124	0.003
26	12.15	25.13	0.480	-0.003	0.987	-0.007	0.690	-0.005	0.549	-0.015	2.077	-0.007	0.950	0.007
27	12.16	25.14	0.531	-0.003	1.055	-0.007	0.707	-0.004	0.619	-0.020	2.141	-0.006	1.027	0.008
28	12.17	25.15	0.497	-0.004	1.023	-0.006	0.681	-0.004	0.530	-0.009	2.068	-0.005	1.055	0.006
1	12.18	25.16	0.852	-0.002	1.166	-0.006	1.166	-0.006	0.813	0.006	2.430	-0.008	1.624	0.007
	12.19	25.17	0.626	-0.003	1.217	-0.009	1.070	0.000	0.788	0.011	1.900	-0.007	1.325	0.009
	12.20	25.18	0.554	0.002	1.134	-0.009	0.882	-0.001	0.778	0.003	1.876	-0.004	1.271	0.011
	12.21	25.19	0.615	0.003	1.173	-0.005	0.950	-0.002	0.769	-0.003	1.908	0.001	1.270	0.009
	12.22	25.20	0.648	0.005	1.158	-0.002	0.966	0.000	0.780	0.014	1.839	0.003	1.127	0.007
	12.23	25.21	0.721	0.004	1.241	-0.003	0.654	0.004	0.666	0.024	2.539	0.003	1.266	0.009
3	12.24	25.22	0.634	0.002	0.963	-0.006	0.980	0.002	0.839	0.020	1.786	-0.004	1.316	0.006
4	12.25	25.23	0.714	0.007	1.014	-0.006	0.983	0.008	0.694	0.036	2.014	-0.001	1.397	0.010
5	12.26	25.24	0.782	0.006	1.263	-0.003	0.963	0.006	0.748	0.031	2.685	0.003	1.686	0.008
6	12.27	25.25	0.710	0.002	1.057	-0.013	1.226	0.002	1.079	0.024	1.922	-0.021	1.594	0.011
7	12.28	25.26	0.766	0.006	1.076	-0.008	1.256	-0.002	1.059	0.020	2.111	-0.011	1.755	0.009
13	12.29	25.27	0.599	0.001	0.921	-0.005	0.938	0.001	0.799	0.021	1.706	-0.003	1.253	0.005
14	12.30	25.28	0.618	0.003	0.911	-0.008	0.932	0.004	0.735	0.023	1.778	-0.006	1.252	0.010
15	12.31		0.685	0.000	0.996	-0.008	1.106	0.005	0.887	0.025	1.883	-0.007	1.474	0.010
16	12.32	25.29	0.666	-0.003	0.990	-0.012	1.154	-0.001	0.949	0.021	1.880	-0.014	1.531	0.007
17	12.33	25.30	0.668	0.001	1.045	-0.010	1.157	0.004	1.026	0.022	2.083	-0.011	1.594	0.011
23	12.34	25.31	0.609	0.003	0.903	-0.005	0.985	-0.001	0.834	0.020	1.803	-0.004	1.283	0.006
24	12.35	25.32	0.645	0.004	1.052	-0.005	0.879	0.004	0.755	0.018	1.952	0.000	1.375	0.008
25	12.36	25.33	0.687	-0.001	1.025	-0.006	0.979	0.006	0.847	0.023	1.974	-0.008	1.360	0.009
30	12.37	25.34	0.647	-0.004	1.296	-0.007	0.802	-0.004	0.501	-0.005	2.435	-0.007	1.587	0.004
	12.38	25.35	0.615	0.000	1.273	-0.007	0.739	0.001	0.598	-0.003	2.536	0.000	1.516	0.007
	12.39	25.36	0.592	-0.006	1.276	-0.009	0.601	-0.003	0.514	-0.005	2.803	-0.013	1.395	0.011
	12.40	25.37	0.577	0.002	1.197	-0.005	0.628	0.000	0.550	-0.005	2.731	-0.002	1.299	0.007
35	12.42	26.1	0.007	0.000	0.707	-0.003	0.461	-0.006	0.224	-0.003	1.189	0.002	0.582	-0.003
	12.43	26.2	0.007	0.000	0.763	-0.001	0.506	-0.002	0.273	-0.004	1.154	0.006	0.690	-0.001
	12.44	26.3	0.008	0.000	0.811	-0.001	0.534	-0.001	0.285	-0.003	1.432	0.002	0.745	0.000
	12.45	26.4	0.007	0.000	0.971	-0.002	0.560	-0.002	0.414	-0.003	1.732	0.001	0.885	-0.002
	12.46	26.5	0.008	0.000	1.133	-0.002	0.647	-0.005	0.433	-0.004	2.164	0.002	1.054	-0.003

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
		26.6												
36	12.47	26.7	0.008	-0.001	0.584	-0.005	0.463	-0.001	0.150	-0.005	0.840	0.003	0.526	0.003
	12.48	26.8	0.007	0.000	0.646	-0.007	0.367	-0.002	0.196	-0.003	0.988	-0.001	0.517	0.001
	12.49	26.9												
	12.50	26.10	0.007	0.000	0.747	-0.007	0.416	-0.003	0.309	-0.007	1.334	0.000	0.632	0.003
	12.51	26.11	0.007	0.000	0.860	-0.005	0.507	-0.002	0.396	-0.007	1.778	0.003	0.825	0.002
	12.52	26.12	0.007	0.000	1.033	-0.005	0.642	-0.003	0.429	-0.005	2.172	0.003	0.986	0.003
37	12.53	26.13	0.007	0.000	0.902	-0.008	0.559	-0.003	0.385	-0.008	1.564	0.003	0.850	0.004
38	12.54	26.14	0.008	0.000	0.958	-0.005	0.616	-0.001	0.420	-0.006	1.799	0.008	0.930	0.003
39	12.55	26.15	0.007	0.000	1.022	-0.005	0.689	-0.003	0.534	-0.003	2.063	0.007	1.031	0.003
40	12.56	26.16	0.007	0.000	0.923	-0.008	0.577	-0.009	0.330	-0.014	1.372	0.000	0.856	-0.001
41	12.57	26.17	0.008	-0.001	0.890	-0.009	0.538	-0.006	0.309	-0.011	1.134	-0.003	0.763	0.001
42	12.58	26.18												
	12.59	26.19												
	12.60	26.20	0.006	0.000	0.920	-0.007	0.579	-0.004	0.333	-0.009	1.538	0.002	0.844	0.003
43	12.61	26.21	0.007	-0.001	0.956	-0.007	0.640	-0.003	0.430	-0.011	1.665	0.002	0.935	0.004
44	12.62	26.22	0.007	0.000	1.005	-0.007	0.706	-0.005	0.436	-0.012	1.689	0.003	0.949	0.002
45	12.63	26.23	0.007	-0.001	0.960	-0.008	0.586	-0.007	0.343	-0.011	1.533	0.000	0.937	0.002
47	12.64	26.24	0.007	-0.001	0.886	-0.009	0.583	-0.003	0.339	-0.008	1.525	-0.001	0.839	0.005
48	12.65	26.25	0.007	0.000	0.824	-0.007	0.628	-0.004	0.350	-0.009	1.212	0.001	0.806	0.003
49	12.66	26.26	0.006	-0.001	1.031	-0.009	0.623	-0.002	0.471	-0.010	1.854	0.002	0.998	0.003
51	12.68	27.1	0.008	0.000	0.462	-0.002	0.202	-0.001	0.123	-0.003	0.548	-0.003	0.251	-0.003
	12.69	27.2	0.009	0.000	0.441	-0.002	0.264	-0.003	0.108	-0.007	0.548	-0.004	0.259	-0.001
	12.70	27.3	0.008	0.000	0.411	-0.001	0.232	-0.002	0.097	-0.007	0.586	-0.001	0.248	0.001
	12.71	27.4	0.008	-0.001	0.434	-0.002	0.284	-0.001	0.128	-0.007	0.573	0.001	0.251	0.002
	12.72	27.5	0.008	0.000	0.504	-0.002	0.314	-0.001	0.139	-0.007	0.703	0.000	0.296	0.001
	12.73	27.6	0.006	0.000	0.684	-0.002	0.490	0.001	0.174	-0.004	0.894	0.001	0.532	0.000
	12.74	27.7	0.008	0.000	0.860	-0.002	0.762	0.001	0.240	-0.003	1.104	-0.002	0.809	-0.003
	12.75	27.8	0.008	0.001	0.967	-0.001	0.801	0.003	0.254	-0.002	1.316	-0.003	0.912	-0.004
50	12.76	27.9	0.008	0.001	0.682	0.001	0.372	0.001	0.156	-0.005	1.093	0.005	0.464	-0.001
	12.77	27.10	0.007	0.001	0.746	0.001	0.276	0.005	0.159	-0.005	1.130	0.006	0.422	0.001
	12.78	27.11	0.325	0.006	0.860	0.003	0.339	0.006	0.179	-0.003	1.244	0.006	0.455	-0.002
52	12.79	27.12	0.317	0.004	0.726	0.002	0.328	0.004	0.157	-0.004	1.106	0.005	0.465	-0.001
53	12.80	27.13	0.278	0.004	0.703	0.003	0.272	0.006	0.191	-0.003	0.978	0.006	0.411	0.000
54	12.81	27.14	0.330	0.005	0.695	0.002	0.325	0.001	0.217	-0.004	0.954	0.002	0.441	-0.003
		27.15												
55	12.82	27.16	0.307	0.003	0.664	0.000	0.474	0.002	0.175	-0.006	1.049	0.006	0.529	0.002
57	12.83	27.17	0.309	0.003	0.731	0.001	0.287	0.004	0.155	-0.006	1.107	0.006	0.427	-0.001
58	12.84	27.18	0.278	0.002	0.624	-0.001	0.301	0.005	0.166	-0.005	0.772	0.006	0.390	0.004
		27.19												
59	12.85	27.20	0.316	0.001	0.631	0.000	0.318	0.002	0.202	-0.006	0.775	0.003	0.405	0.003
60	12.86	27.21	0.296	0.000	0.744	0.000	0.372	0.001	0.211	-0.006	1.085	0.004	0.466	0.000
62	12.87	27.22												
	12.88	27.23	0.322	0.001	0.735	0.000	0.264	0.002	0.163	-0.005	1.098	0.006	0.394	0.000
63	12.89	27.24	0.241	0.002	0.660	0.000	0.334	0.002	0.164	-0.006	0.829	0.003	0.370	0.001
64	12.90	27.25	0.270	0.005	0.716	0.001	0.336	0.004	0.170	-0.005	0.977	0.010	0.511	0.002

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
66	13.1	28.1	0.409	0.001	0.603	-0.001	0.364	-0.001	0.344	0.008	1.176	0.000	0.511	0.001
	13.3	28.2	0.301	0.001	0.447	-0.003	0.370	-0.005	0.303	0.002	0.915	0.000	0.457	0.001
	13.4	28.3	0.277	0.004	0.437	-0.003	0.507	-0.002	0.270	0.003	0.661	0.006	0.531	0.002
	13.5	28.4	0.386	0.007	0.475	-0.001	0.546	-0.003	0.372	0.011	0.884	0.006	0.494	-0.001
	13.6	28.5	0.441	0.005	0.538	-0.002	0.574	-0.002	0.499	0.016	1.056	0.005	0.599	0.000
65	13.7	28.6	0.955	-0.001	1.209	-0.003	1.126	-0.010	1.031	-0.008	2.849	0.005	1.620	-0.003
	13.8	28.7	0.861	0.001	0.955	-0.007	1.010	-0.008	0.945	-0.002	2.221	-0.004	1.277	0.002
	13.9	28.8	0.708	0.004	0.785	-0.003	0.901	-0.004	0.896	0.005	1.963	0.000	1.112	0.000
	13.10	28.9	0.706	0.005	0.898	-0.005	0.757	-0.003	0.838	0.005	2.078	0.000	1.027	-0.001
	13.11	28.10	0.614	0.006	1.021	-0.003	0.679	0.003	0.751	0.010	2.128	0.006	1.045	0.004
67	13.12	28.11	0.674	-0.001	1.032	-0.006	1.027	-0.003	1.020	0.007	2.454	-0.010	1.587	0.001
68	13.13	28.12	0.627	0.005	0.991	-0.003	0.798	0.001	0.841	0.011	2.350	-0.001	1.358	0.000
69	13.14	28.13	0.614	0.009	1.071	-0.001	0.771	0.009	0.750	0.024	2.299	0.006	1.345	0.003
70	13.15	28.14	0.694	0.002	1.090	-0.003	1.167	-0.004	1.035	0.009	2.524	0.004	1.757	-0.005
71	13.16	28.15	0.709	0.006	1.129	-0.003	1.230	-0.008	1.188	0.007	2.568	0.004	1.729	-0.008
72	13.17	28.16	0.673	0.003	0.945	-0.005	0.925	-0.004	0.946	0.009	2.337	-0.007	1.406	0.001
73	13.18	28.17	0.687	0.003	0.969	-0.005	0.873	-0.003	0.825	0.015	2.298	-0.002	1.322	-0.001
74	13.19	28.18	0.758	0.007	1.071	0.000	0.933	-0.003	0.937	0.016	2.321	0.005	1.593	-0.006
75	13.20	28.19	0.712	0.005	1.027	-0.004	1.030	-0.003	0.982	0.006	2.468	0.000	1.664	0.000
76	13.21	28.20	0.721	0.006	1.106	0.001	1.159	-0.006	1.012	0.005	2.570	0.009	1.862	-0.005
77	13.22	28.21	0.680	0.000	0.964	-0.006	0.942	-0.006	0.962	0.005	2.275	-0.006	1.458	0.001
78	13.23	28.22	0.637	0.004	0.941	-0.006	0.899	0.001	0.854	0.010	2.279	-0.002	1.349	-0.001
79	13.24	28.23	0.688	0.000	1.065	-0.007	0.975	-0.004	0.956	0.011	2.445	-0.003	1.658	0.001
80	13.25	28.24	0.784	-0.007	1.444	-0.003	1.094	0.002	1.250	-0.006	3.310	-0.011	1.697	0.006
81	13.26	28.25	0.795	-0.001	1.473	-0.008	0.988	0.003	1.142	-0.002	3.488	-0.014	1.652	0.006
82	13.27	28.26	0.487	-0.002	0.725	0.002	0.381	-0.006	0.590	-0.005	1.865	-0.002	0.694	-0.004
80A	13.29	29.1	0.237	0.004	0.583	0.002	0.417	0.002	0.110	0.001	0.935	0.003	0.540	0.003
	13.30	29.2	0.260	0.002	0.624	0.002	0.391	0.000	0.122	-0.002	0.985	-0.001	0.523	0.005
	13.31	29.3	0.258	0.006	0.587	0.002	0.312	0.002	0.121	-0.001	1.032	0.002	0.478	0.005
	13.32	29.4	0.228	0.005	0.591	0.002	0.292	0.004	0.142	0.001	0.909	0.004	0.398	0.002
	13.33	29.5	0.201	0.005	0.549	0.001	0.299	0.005	0.133	0.001	0.784	0.002	0.358	0.002
		29.6												
81A	13.34	29.7	0.172	0.002	0.454	0.002	0.382	0.002	0.098	-0.002	0.672	0.001	0.391	0.005
	13.35	29.8	0.189	-0.002	0.472	0.003	0.401	-0.001	0.112	-0.002	0.649	-0.004	0.428	0.003
	13.36	29.9	0.165	0.000	0.430	0.001	0.334	-0.002	0.099	-0.001	0.560	-0.001	0.343	0.001
	13.37	29.10	0.136	-0.005	0.458	0.001	0.262	-0.003	0.090	-0.002	0.508	-0.006	0.287	0.001
	13.38	29.11	0.116	-0.003	0.409	0.002	0.273	-0.002	0.081	-0.002	0.494	-0.004	0.275	0.001
	13.39	29.12	0.108	0.000	0.377	0.003	0.253	-0.001	0.080	-0.003	0.490	-0.002	0.273	0.003
	13.40	29.13	0.108	-0.001	0.345	0.003	0.227	-0.001	0.074	-0.004	0.488	0.000	0.268	0.003
	13.41	29.14	0.121	-0.001	0.340	0.002	0.249	-0.002	0.071	-0.004	0.474	0.002	0.275	0.004
	13.42	29.15	0.125	0.002	0.340	0.003	0.287	-0.002	0.080	-0.003	0.452	0.001	0.315	0.002
81B	13.43	29.16	0.298	0.006	0.412	0.003	0.465	-0.001	0.119	-0.001	0.771	-0.002	0.678	0.004
	13.44	29.17	0.243	-0.003	0.339	0.004	0.352	-0.001	0.111	0.001	0.697	-0.010	0.540	0.001
	13.45	29.18	0.201	0.002	0.260	0.003	0.375	-0.002	0.111	-0.001	0.567	0.000	0.411	-0.001
	13.46	29.19	0.291	-0.004	0.351	0.004	0.774	-0.004	0.225	-0.003	0.532	-0.005	0.856	-0.003
	13.47	29.20	0.382	-0.005	0.408	0.005	0.880	-0.003	0.317	-0.002	0.592	-0.010	1.071	-0.003

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
	13.48	29.21	0.448	-0.007	0.442	0.003	0.903	-0.002	0.370	-0.007	0.692	-0.005	1.071	-0.001
87	13.49	29.22	0.202	0.000	0.306	0.002	0.337	-0.002	0.090	-0.002	0.593	-0.003	0.428	0.002
88	13.50	29.23	0.193	-0.004	0.364	0.002	0.431	0.001	0.103	-0.001	0.728	-0.005	0.630	0.002
89	13.51	29.24	0.246	-0.001	0.352	0.002	0.394	0.000	0.109	-0.001	0.785	-0.005	0.618	0.003
90	13.52	29.25	0.229	-0.004	0.357	0.002	0.400	0.000	0.121	-0.001	0.690	-0.005	0.507	0.004
91	13.53	29.26	0.209	-0.003	0.373	0.003	0.333	0.001	0.108	0.000	0.620	-0.006	0.444	0.003
92	13.54	29.27	0.226	-0.001	0.320	0.003	0.397	-0.001	0.099	-0.002	0.603	-0.006	0.470	0.002
93	13.55	29.28	0.275	-0.002	0.354	0.003	0.420	0.000	0.141	0.000	0.724	-0.008	0.654	0.003
94	13.56	29.29	0.264	-0.001	0.372	0.004	0.446	0.000	0.114	-0.001	0.707	-0.004	0.666	0.002
		30.1												
95	13.59	30.2	0.460	-0.001	0.392	0.002	0.764	-0.002	0.186	0.006	0.889	-0.013	1.258	-0.002
	13.60	30.3	0.399	0.002	0.405	0.005	0.832	-0.006	0.219	0.003	0.975	-0.006	1.203	-0.002
	13.61	30.4	0.417	0.003	0.374	0.002	0.730	-0.005	0.170	0.002	0.962	-0.003	1.142	-0.001
101	13.62	30.5	0.454	-0.004	0.403	0.000	0.781	-0.002	0.244	0.004	0.952	-0.012	1.252	-0.002
95A	13.63	30.6	0.468	0.001	0.413	0.003	0.837	-0.007	0.297	0.003	0.947	-0.003	1.231	-0.001
101A	13.64	30.7	0.448	-0.004	0.471	0.001	0.813	-0.003	0.161	0.005	0.988	-0.014	1.282	-0.003
102	13.65	30.8	0.504	-0.010	0.440	-0.001	0.943	0.001	0.238	0.006	1.239	-0.010	1.516	-0.003
103	13.66	30.9	0.565	-0.005	0.427	-0.001	0.801	-0.001	0.293	0.005	1.049	-0.013	1.469	-0.002
104	13.67	30.10	0.473	-0.005	0.430	0.001	0.909	-0.001	0.221	0.005	0.964	-0.010	1.284	0.000
106	13.68	30.11	0.477	-0.006	0.390	0.000	0.830	-0.003	0.233	0.005	0.905	-0.013	1.309	0.000
107	13.69	30.12	0.524	-0.006	0.454	0.000	0.961	-0.002	0.322	0.006	0.976	-0.017	1.496	-0.002
108	13.70	30.13	0.505	-0.002	0.444	0.001	1.000	-0.002	0.269	0.005	1.060	-0.012	1.444	-0.001
109	13.72	31.1	0.248	-0.002	0.310	0.000	0.363	-0.002	0.106	-0.001	0.678	-0.009	0.615	-0.004
110	13.73	31.2	0.278	-0.006	0.378	-0.003	0.544	-0.003	0.134	0.000	0.829	-0.013	0.869	-0.006
111	13.74	31.3	0.306	-0.006	0.388	-0.004	0.585	0.000	0.128	0.001	0.863	-0.009	0.917	-0.006
112	13.75	31.4	0.240	-0.004	0.393	0.002	0.385	-0.003	0.122	0.000	0.684	-0.012	0.620	-0.002
113	13.76	31.5	0.220	-0.003	0.378	0.002	0.303	-0.002	0.109	0.000	0.575	-0.013	0.483	0.000
114	13.77	31.6	0.501	-0.001	0.438	0.002	1.054	-0.004	0.357	0.001	0.930	-0.012	1.495	0.000
115	13.78	31.7	0.519	-0.004	0.419	-0.001	1.123	-0.003	0.399	0.002	1.084	-0.014	1.708	-0.003
116	13.79	31.8	0.519	-0.004	0.441	-0.002	1.128	-0.002	0.397	0.003	1.067	-0.013	1.757	-0.003
117	13.80	31.9	0.505	-0.004	0.401	0.001	1.107	-0.005	0.342	0.002	0.993	-0.013	1.535	0.001
118	13.81	31.10	0.554	-0.004	0.441	0.000	1.142	-0.003	0.410	0.000	0.999	-0.010	1.595	0.001
128	13.82	31.11	0.473	-0.005	0.434	-0.002	1.065	-0.005	0.365	-0.001	1.105	-0.009	1.487	0.001
129	13.83	31.12	0.488	-0.006	0.460	-0.006	1.194	-0.001	0.317	0.002	1.081	-0.007	1.711	-0.004
130	13.84	31.13	0.545	-0.004	0.422	-0.005	1.195	0.001	0.346	0.003	1.154	-0.008	1.777	-0.003
123	13.85		0.536	-0.007	0.454	-0.002	1.056	-0.004	0.446	0.000	1.074	-0.013	1.594	-0.002
122	13.86	31.14	0.450	-0.007	0.478	0.000	0.979	-0.005	0.332	-0.002	0.996	-0.016	1.440	-0.001
124	13.87	31.15	0.416	-0.003	0.434	0.001	0.929	-0.007	0.330	-0.003	0.793	-0.016	1.192	-0.002
122A	13.88	31.16	0.443	-0.011	0.466	-0.003	0.853	-0.004	0.197	0.001	0.992	-0.023	1.350	-0.002
122B	13.89		0.522	-0.007	0.489	-0.002	0.935	-0.004	0.343	-0.005	0.876	-0.012	1.342	-0.003
124A	13.90	31.17	0.499	-0.005	0.586	-0.002	0.988	-0.002	0.338	-0.009	0.909	-0.006	1.400	-0.006
125	13.91	31.18	0.230	-0.001	0.293	0.002	0.493	-0.002	0.140	-0.003	0.641	-0.011	0.593	0.001
126	13.92		0.291	-0.003	0.315	-0.004	0.548	0.002	0.150	-0.001	0.679	-0.011	0.730	-0.003
127	13.93	31.19	0.281	-0.004	0.311	-0.004	0.589	0.001	0.166	-0.002	0.753	-0.014	0.829	-0.001
119	13.94	31.20	0.250	-0.001	0.277	0.003	0.405	-0.004	0.128	-0.004	0.584	-0.014	0.498	0.002
120	13.95	31.21	0.357	-0.001	0.441	-0.004	0.590	-0.001	0.177	-0.004	0.691	0.000	0.745	-0.005

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
121	13.96	31.22	0.266	-0.005	0.297	0.004	0.563	-0.008	0.168	-0.005	0.560	-0.012	0.650	-0.002
131	14.1	32.1	0.123	-0.002	0.349	-0.001	0.240	-0.005	0.095	-0.004	0.421	-0.003	0.275	-0.003
132	14.2		0.128	-0.003	0.341	0.000	0.238	-0.005	0.091	-0.004	0.423	-0.003	0.285	-0.003
133	14.3	32.2	0.183	-0.001	0.396	-0.001	0.323	-0.005	0.113	-0.004	0.525	-0.001	0.473	-0.003
133A	14.4	32.3	0.238	-0.001	0.486	-0.001	0.430	-0.005	0.141	-0.004	0.649	-0.001	0.622	-0.003
134	14.5	32.4	0.114	-0.001	0.314	0.000	0.259	-0.005	0.083	-0.003	0.431	-0.004	0.296	-0.004
135	14.6	32.5	0.108	-0.002	0.318	0.000	0.230	-0.005	0.071	-0.003	0.440	-0.003	0.273	-0.004
139	14.7	32.6	0.113	-0.001	0.320	0.000	0.251	-0.005	0.081	-0.003	0.423	-0.003	0.296	-0.003
140	14.8	32.7	0.144	-0.005	0.367	0.001	0.281	-0.006	0.105	-0.002	0.529	-0.007	0.380	-0.005
141	14.9	32.8	0.185	-0.004	0.400	0.000	0.310	-0.002	0.145	0.000	0.594	-0.008	0.409	-0.006
142	14.10	32.9	0.124	0.001	0.311	-0.001	0.278	-0.004	0.096	-0.008	0.391	0.005	0.302	0.000
143	14.11	32.10	0.119	0.002	0.313	-0.002	0.253	-0.002	0.091	-0.010	0.356	0.012	0.295	0.001
136	14.12	32.11	0.114	-0.002	0.325	0.000	0.261	-0.006	0.095	-0.005	0.418	-0.003	0.291	-0.003
137	14.13	32.12	0.219	-0.002	0.518	0.000	0.422	-0.005	0.122	-0.006	0.759	-0.002	0.520	0.000
138	14.14	32.13	0.108	0.000	0.341	0.000	0.225	-0.006	0.079	-0.008	0.414	0.002	0.279	-0.001
		33.1												
		33.2												
		33.3												
	15.1	34.1												
	15.2	34.2												
	15.3	34.3	0.599	-0.004	0.680	0.001	0.899	0.003	0.444	0.008	1.277	-0.010	1.339	0.000
	15.4	34.4	0.167	-0.009	0.369	0.003	0.320	0.001	0.121	0.007	0.587	-0.013	0.361	-0.001
	15.5	34.5	0.124	-0.002	0.314	0.004	0.194	0.002	0.106	0.008	0.491	-0.013	0.291	-0.002
	15.6	34.6	0.098	-0.001	0.271	0.004	0.200	0.002	0.105	0.007	0.425	-0.012	0.280	0.001
	15.7	34.7	0.093	0.000	0.270	0.004	0.167	0.002	0.104	0.008	0.403	-0.011	0.249	0.002
	15.8	34.8	0.099	-0.002	0.279	0.003	0.151	0.001	0.088	0.006	0.438	-0.009	0.219	0.003
	15.9	34.9	0.112	0.000	0.262	0.004	0.152	-0.001	0.096	0.005	0.454	-0.009	0.269	0.001
	15.10	34.10	0.136	-0.002	0.303	0.004	0.233	-0.002	0.120	0.007	0.572	-0.007	0.370	-0.001
	15.11	34.11	0.156	-0.001	0.302	0.003	0.251	-0.003	0.141	0.005	0.623	-0.005	0.399	-0.003
	15.12	34.12	0.219	-0.003	0.309	0.003	0.271	-0.002	0.133	0.006	0.574	-0.005	0.449	0.000
	15.13	34.13	0.203	-0.001	0.343	0.003	0.266	-0.001	0.156	0.006	0.644	-0.006	0.455	0.000
	15.14	34.14	0.219	-0.001	0.345	0.003	0.329	0.000	0.143	0.006	0.652	-0.007	0.434	0.000
	15.15	34.15	0.211	-0.001	0.358	0.004	0.365	-0.002	0.148	0.005	0.663	-0.008	0.440	-0.003
	15.16	34.16	0.212	-0.001	0.398	0.003	0.433	0.000	0.171	0.006	0.742	-0.009	0.482	-0.001
	15.17	34.17	0.247	-0.003	0.453	0.002	0.488	0.001	0.195	0.007	0.709	-0.011	0.518	0.003
	15.18	34.18	0.309	-0.001	0.505	0.002	0.536	0.001	0.274	0.008	0.774	-0.013	0.582	0.002
	15.19	34.19	0.334	-0.004	0.505	0.003	0.555	0.001	0.243	0.005	0.841	-0.011	0.611	0.003
	15.20	34.20	0.156	0.000	0.360	0.002	0.236	0.005	0.099	0.009	0.503	-0.013	0.272	-0.001
	15.21	34.21	0.180	0.001	0.396	0.000	0.250	0.002	0.116	0.009	0.521	-0.011	0.315	-0.001
	15.23	35.1	0.181	-0.003	0.422	0.000	0.277	0.003	0.133	0.008	0.607	-0.011	0.328	-0.001
	15.24	35.2	0.219	-0.006	0.475	-0.001	0.301	0.005	0.164	0.010	0.674	-0.011	0.387	-0.003
	15.25	35.3	0.148	0.000	0.328	0.000	0.241	0.001	0.085	0.004	0.472	-0.006	0.230	-0.003
	15.26	35.4	0.138	-0.001	0.303	-0.002	0.254	0.000	0.089	0.003	0.449	-0.003	0.214	-0.002
	15.27	35.5	0.129	0.001	0.272	-0.002	0.210	0.000	0.072	0.004	0.407	-0.004	0.191	-0.003
	15.28	35.6	0.104	0.001	0.253	-0.002	0.190	-0.001	0.071	0.004	0.378	-0.005	0.164	-0.002
	15.29	35.7	0.087	0.000	0.259	-0.002	0.169	0.001	0.069	0.004	0.356	-0.006	0.145	-0.002

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
	15.30	35.8	0.090	0.000	0.262	-0.003	0.152	0.000	0.071	0.004	0.381	-0.005	0.156	-0.001
	15.31	35.9	0.091	0.000	0.262	-0.003	0.174	0.000	0.072	0.004	0.390	-0.007	0.165	0.000
	15.32	35.10	0.107	-0.001	0.249	-0.002	0.186	0.000	0.081	0.003	0.378	-0.009	0.144	-0.002
	15.33	35.11	0.101	-0.001	0.255	-0.002	0.197	0.000	0.096	0.004	0.406	-0.010	0.180	-0.002
	15.34	35.12	0.118	-0.001	0.283	-0.001	0.191	0.003	0.083	0.005	0.409	-0.011	0.171	-0.001
	15.35	35.13	0.115	-0.002	0.265	-0.002	0.207	0.002	0.096	0.004	0.402	-0.012	0.180	-0.001
	15.36	35.14	0.130	0.000	0.286	0.000	0.206	0.002	0.096	0.004	0.394	-0.012	0.161	0.000
	15.37	35.15	0.131	0.000	0.283	0.000	0.213	0.003	0.100	0.004	0.396	-0.014	0.167	0.002
	15.38	35.16	0.142	0.001	0.280	0.001	0.223	0.002	0.103	0.004	0.402	-0.013	0.221	0.001
	15.39	35.17	0.140	0.001	0.293	0.000	0.245	0.003	0.112	0.004	0.415	-0.013	0.208	0.002
	15.40	35.18	0.165	0.000	0.286	0.001	0.277	0.002	0.115	0.003	0.452	-0.012	0.291	0.002
	15.41	35.19	0.148	0.000	0.288	0.002	0.303	0.002	0.131	0.002	0.418	-0.010	0.278	0.000
	15.42	35.20	0.158	0.000	0.309	0.002	0.301	0.001	0.126	0.003	0.421	-0.010	0.284	0.000
	15.43	35.21	0.141	0.000	0.305	0.001	0.286	0.001	0.125	0.003	0.430	-0.009	0.261	-0.001
	15.44	35.22	0.155	-0.001	0.320	0.001	0.340	-0.001	0.145	0.002	0.457	-0.008	0.335	0.000
	15.45	35.23	0.146	0.001	0.321	0.001	0.317	0.000	0.133	0.002	0.464	-0.009	0.325	-0.001
	15.46	35.24	0.152	-0.001	0.307	0.001	0.320	-0.002	0.142	0.001	0.465	-0.008	0.320	-0.004
	15.47	35.25	0.140	0.000	0.312	0.001	0.333	-0.002	0.144	0.003	0.502	-0.010	0.344	-0.002
	15.48	35.26	0.144	0.001	0.317	0.002	0.347	0.000	0.191	0.002	0.509	-0.010	0.404	-0.003
	15.49	35.27	0.151	0.000	0.319	0.001	0.360	-0.002	0.185	0.002	0.498	-0.011	0.376	-0.001
		35.28												
	15.50	35.29	0.155	0.001	0.333	0.001	0.389	-0.002	0.192	0.002	0.512	-0.012	0.429	-0.002
	15.51	35.30	0.182	0.000	0.316	0.001	0.413	0.000	0.196	0.003	0.578	-0.013	0.544	-0.002
	15.54	36.1	0.260	-0.004	0.372	-0.001	0.462	0.001	0.230	0.002	0.681	-0.014	0.565	0.002
		36.2												
	15.55	37.1	0.283	0.001	0.406	-0.001	0.523	0.002	0.246	0.003	0.778	-0.016	0.629	0.001
	15.57	38.1	0.123	-0.002	0.286	0.000	0.215	-0.001	0.099	0.001	0.417	-0.010	0.241	0.003
	15.58	38.2	0.314	-0.009	0.529	-0.001	0.504	0.002	0.211	0.002	0.791	-0.001	0.565	-0.002
	15.59	38.3	0.537	-0.002	0.681	-0.003	0.564	0.001	0.755	0.002	1.394	0.002	0.789	0.001
	15.60	38.4	0.537	-0.001	0.569	-0.004	0.694	-0.003	0.689	0.004	1.289	0.003	0.814	0.000
	15.61	38.5	0.341	-0.002	0.520	-0.004	0.431	0.000	0.311	0.002	0.907	-0.002	0.460	0.004
	15.62	38.6	0.269	-0.003	0.522	-0.004	0.438	-0.003	0.353	0.002	0.807	-0.001	0.514	0.002
	15.63	38.7	0.167	-0.002	0.342	-0.005	0.260	-0.001	0.150	0.001	0.419	0.000	0.280	0.002
	15.64	38.8	0.165	-0.002	0.348	-0.005	0.269	-0.002	0.140	0.001	0.505	0.000	0.272	-0.004
	15.65	38.9	0.178	-0.002	0.346	-0.003	0.235	-0.003	0.140	-0.001	0.489	0.002	0.261	-0.004
	15.66	38.10	0.193	-0.001	0.352	-0.003	0.222	-0.005	0.134	-0.001	0.479	0.002	0.257	-0.004
	15.67	38.11	0.189	-0.002	0.388	-0.002	0.243	-0.006	0.114	-0.003	0.481	0.002	0.256	-0.006
	15.68	38.12	0.197	-0.003	0.399	-0.001	0.275	-0.007	0.132	-0.003	0.537	0.003	0.278	-0.004
	15.69	38.13	0.277	-0.003	0.467	-0.001	0.336	-0.008	0.190	-0.004	0.703	0.003	0.349	-0.007
	15.70	38.14	0.296	-0.003	0.513	-0.001	0.374	-0.007	0.218	-0.003	0.708	0.005	0.431	-0.007
	15.71	38.15	0.335	-0.005	0.538	0.000	0.444	-0.009	0.237	-0.004	0.784	0.005	0.423	-0.007
	15.72	38.16	0.377	-0.004	0.587	0.002	0.475	-0.009	0.268	-0.003	0.831	0.003	0.452	-0.013
	15.73	38.17	0.396	-0.008	0.588	0.001	0.518	-0.011	0.257	-0.002	0.933	0.006	0.465	-0.011
	15.74	38.18	0.412	-0.008	0.587	0.002	0.520	-0.009	0.309	-0.002	1.039	0.006	0.454	-0.011
	15.75	38.19	0.434	-0.006	0.624	0.000	0.591	-0.007	0.391	-0.003	1.180	0.007	0.520	-0.007
	15.76	38.20	0.439	-0.009	0.645	0.001	0.624	-0.008	0.449	0.000	1.247	0.007	0.529	-0.008

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
	15.77	38.21	0.490	-0.007	0.714	0.001	0.714	-0.005	0.537	-0.001	1.334	0.011	0.574	-0.002
	15.78	38.22	0.380	-0.007	0.539	0.000	0.438	-0.009	0.235	-0.004	0.762	0.007	0.394	-0.006
	15.80	39.1	0.301	-0.003	0.443	-0.004	0.406	0.002	0.329	0.003	0.825	0.001	0.508	-0.003
	15.81	39.2	0.325	-0.005	0.521	0.000	0.370	-0.010	0.183	-0.004	0.726	0.005	0.378	-0.007
	15.82	39.3	0.399	0.003	0.746	0.002	0.440	-0.001	0.349	0.004	1.290	-0.003	0.484	0.001
	15.83	39.4	0.209	-0.001	0.496	0.002	0.266	-0.003	0.153	0.004	0.675	-0.003	0.326	-0.010
	15.84	39.5	0.166	0.003	0.359	0.004	0.225	-0.003	0.129	0.001	0.527	-0.004	0.247	-0.001
	15.85	39.6	0.194	-0.004	0.360	0.003	0.186	-0.006	0.140	-0.002	0.479	-0.003	0.272	-0.002
	15.86	39.7	0.335	-0.005	0.460	0.006	0.246	-0.009	0.222	-0.003	0.770	-0.001	0.356	-0.005
	15.87	39.8	0.355	-0.007	0.473	0.006	0.313	-0.013	0.205	-0.004	0.751	-0.002	0.352	-0.005
	15.88	39.9	0.422	-0.006	0.485	0.007	0.420	-0.011	0.315	-0.002	0.883	-0.001	0.418	-0.003
	15.89	39.10	0.519	-0.002	0.565	0.007	0.504	-0.004	0.451	-0.001	1.127	0.002	0.491	-0.001
	15.91	40.1	0.515	-0.002	0.676	0.006	0.605	-0.003	0.419	0.001	1.106	0.002	0.561	0.000
	15.92	40.2	0.351	-0.003	0.459	0.005	0.260	-0.010	0.230	-0.004	0.721	-0.002	0.370	-0.003
	16.1	41.1	0.388	0.003	0.556	0.007	0.532	-0.005	0.299	-0.005	0.936	0.001	0.415	0.002
	16.2	42.1	0.439	0.003	0.562	0.006	0.532	-0.004	0.319	-0.003	0.930	0.001	0.401	0.002
	16.3	42.2	0.156	-0.006	0.378	0.003	0.222	-0.005	0.115	0.000	0.573	-0.001	0.219	-0.002
	16.4	42.3	0.178	0.000	0.336	0.006	0.225	-0.005	0.114	0.001	0.507	0.000	0.212	-0.008
	16.5	42.4	0.160	-0.001	0.268	0.006	0.224	-0.003	0.110	0.002	0.372	0.000	0.188	-0.006
	16.6	42.5	0.208	0.002	0.299	0.006	0.252	-0.002	0.123	0.001	0.401	0.002	0.198	-0.007
	16.7	42.6	0.159	0.000	0.298	0.005	0.261	0.000	0.099	0.002	0.323	0.002	0.219	-0.006
	16.8	42.7	0.206	-0.002	0.311	0.006	0.267	-0.002	0.119	0.001	0.399	-0.001	0.221	-0.008
	16.9	42.8	0.236	-0.002	0.313	0.005	0.297	-0.003	0.135	0.000	0.442	-0.001	0.254	-0.007
	16.10	42.9	0.258	-0.004	0.403	0.004	0.333	-0.007	0.158	-0.002	0.554	-0.001	0.293	-0.009
	16.11	42.10	0.260	-0.006	0.489	0.004	0.401	-0.007	0.152	-0.002	0.676	-0.001	0.374	-0.009
	16.12	42.11	0.277	-0.006	0.576	0.004	0.452	-0.006	0.177	-0.002	0.858	0.000	0.502	-0.007
	16.13	42.12	0.285	-0.002	0.663	0.003	0.568	-0.003	0.253	-0.002	1.088	0.002	0.627	-0.007
	16.14	42.13	0.321	-0.006	0.779	0.003	0.588	-0.004	0.372	-0.001	1.308	0.000	0.739	-0.007
	16.15	42.14	0.131	-0.003	0.277	0.004	0.266	-0.004	0.104	0.001	0.350	0.000	0.199	-0.009
	16.16	42.15	0.145	0.001	0.295	0.005	0.285	-0.002	0.103	0.000	0.351	0.001	0.239	-0.008
	16.17	42.16	0.129	0.000	0.299	0.003	0.274	-0.003	0.116	0.000	0.368	-0.001	0.223	-0.009
	16.18	42.17	0.154	-0.003	0.284	0.004	0.291	-0.002	0.140	0.001	0.389	-0.002	0.242	-0.010
	16.19	42.18	0.132	-0.002	0.298	0.005	0.298	-0.004	0.117	0.001	0.418	-0.003	0.244	-0.011
	16.20	42.19	0.164	-0.006	0.313	0.004	0.329	-0.006	0.124	-0.001	0.438	-0.003	0.275	-0.009
	16.21	42.20	0.143	-0.004	0.337	0.003	0.314	-0.007	0.137	-0.002	0.471	-0.001	0.326	-0.009
	16.22	42.21	0.163	-0.002	0.375	0.004	0.352	-0.007	0.146	-0.001	0.480	-0.003	0.350	-0.010
	16.23	42.22	0.155	-0.002	0.400	0.004	0.310	-0.008	0.147	-0.002	0.571	-0.003	0.395	-0.011
	16.24	42.23	0.236	-0.006	0.430	0.002	0.389	-0.007	0.153	-0.002	0.719	-0.003	0.456	-0.011
	16.25	42.24	0.272	-0.004	0.544	0.003	0.522	-0.006	0.189	-0.001	0.888	-0.001	0.609	-0.008
	16.26	42.25	0.350	-0.004	0.611	0.004	0.577	-0.007	0.296	-0.002	0.978	-0.001	0.836	-0.010
			0.383	-0.005	0.608	0.004	0.638	-0.007	0.374	-0.003	1.198	0.000	0.912	-0.008
49	12.67													
64	12.91		0.007	-0.004	0.037	-0.005	0.011	-0.004	0.028	-0.003	0.017	0.004	0.014	0.004

Accelerometer Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Accelerometer X1 Vibratory ft./sq. sec.	Accelerometer X1 Mean ft./sq. sec.	Accelerometer Y2 Vibratory ft./sq. sec.	Accelerometer Y2 Mean ft./sq. sec.	Accelerometer Z3 Vibratory ft./sq. sec.	Accelerometer Z3 Mean ft./sq. sec.	Accelerometer X4 Vibratory ft./sq. sec.	Accelerometer X4 Mean ft./sq. sec.	Accelerometer Y5 Vibratory ft./sq. sec.	Accelerometer Y5 Mean ft./sq. sec.	Accelerometer Z6 Vibratory ft./sq. sec.	Accelerometer Z6 Mean ft./sq. sec.
82	13.28		0.014	-0.001	0.032	0.000	0.011	0.000	0.027	-0.007	0.016	0.001	0.014	0.002
94	13.57		0.016	-0.002	0.041	-0.002	0.011	-0.001	0.028	0.000	0.019	0.003	0.017	0.003
94	13.58		0.016	0.000	0.042	0.001	0.013	0.002	0.033	-0.002	0.021	0.001	0.017	0.003
108	13.71		0.014	0.000	0.040	0.002	0.011	0.003	0.032	-0.002	0.021	-0.001	0.019	0.003
	13.97		0.015	0.001	0.040	-0.001	0.011	-0.001	0.036	-0.002	0.020	0.005	0.018	0.000
138	14.17		0.014	0.002	0.046	-0.002	0.014	0.000	0.035	-0.008	0.014	0.000	0.025	0.000
	15.79		0.017	0.001	0.058	-0.003	0.013	-0.002	0.040	-0.005	0.019	0.002	0.027	-0.003
	15.90		0.013	0.000	0.040	-0.004	0.010	-0.002	0.034	-0.003	0.019	0.004	0.013	0.004
	15.93		0.016	0.001	0.034	-0.002	0.009	-0.001	0.027	-0.002	0.021	-0.003	0.016	-0.002
			0.012	0.001	0.035	0.001	0.009	-0.001	0.035	-0.001	0.014	-0.001	0.021	0.004

APPENDIX I

Gimbal and Pitch Link Loads

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
		24.1								
		24.2								
2	12.2	25.1	0.198	0.278	0.610	0.440	0.531	-0.122	3.84	12.51
	12.3	25.2	0.214	0.283	0.519	0.388	0.540	-0.117	5.38	14.53
	12.4		0.232	0.312	0.674	0.377	0.690	-0.161	6.52	15.98
8	12.5	25.3	0.204	0.354	0.723	0.388	0.766	-0.146	4.92	14.06
9	12.6	25.4	0.580	0.362	0.308	0.379	0.726	-0.111	5.56	15.05
10	12.7	25.5	1.218	0.338	0.595	0.396	1.083	-0.083	6.22	15.99
11	12.8	25.6	0.668	0.407	1.257	0.386	1.129	-0.198	4.18	13.10
12	12.9	25.7	1.358	0.369	1.837	0.365	1.724	-0.158	3.58	12.06
18	12.10	28.8	0.229	0.305	0.677	0.367	0.653	-0.150	4.88	14.00
19	12.11	25.9	0.784	0.340	0.247	0.395	0.693	-0.092	4.62	14.00
20	12.12	25.10	1.669	0.306	1.004	0.419	1.349	-0.107	4.48	13.92
21	12.13	25.11	0.897	0.359	1.361	0.407	1.151	-0.159	5.00	14.01
22	12.14	25.12	1.749	0.355	2.200	0.382	1.999	-0.175	5.06	14.10
26	12.15	25.13	0.159	0.322	0.571	0.396	0.632	-0.124	4.96	14.02
27	12.16	25.14	0.650	0.295	0.931	0.349	1.279	-0.109	4.94	13.97
28	12.17	25.15	0.748	0.329	0.897	0.400	0.482	-0.137	4.86	13.98
1	12.18	25.16	0.418	0.401	0.851	0.331	0.690	-0.106	1.91	4.94
	12.19	25.17	0.327	0.353	0.827	0.378	0.681	-0.117	3.27	7.07
	12.20	25.18	0.250	0.315	0.690	0.398	0.595	-0.116	4.79	9.07
	12.21	25.19	0.241	0.331	0.766	0.376	0.684	-0.114	4.81	9.07
	12.22	25.20	0.256	0.336	0.766	0.381	0.745	-0.128	6.43	11.13
	12.23	25.21	0.418	0.257	0.323	0.539	0.507	-0.212	8.29	13.13
3	12.24	25.22	0.287	0.211	0.775	0.595	0.797	-0.218	6.01	10.36
4	12.25	25.23	0.696	0.290	0.833	0.551	0.320	-0.267	6.65	11.40
5	12.26	25.24	1.431	0.301	1.349	0.520	0.723	-0.241	7.47	12.45
6	12.27	25.25	0.870	0.236	1.160	0.621	1.492	-0.272	5.23	9.45
7	12.28	25.26	1.563	0.182	1.584	0.654	2.139	-0.276	4.64	8.45

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
13	12.29	25.27	0.284	0.216	0.745	0.600	0.772	-0.212	6.00	10.39
14	12.30	25.28	0.891	0.219	0.970	0.583	0.375	-0.260	5.89	10.36
15	12.31		1.831	0.228	1.788	0.599	1.089	-0.274	5.85	10.40
16	12.32	25.29	1.105	0.205	1.233	0.650	1.620	-0.263	6.09	10.51
17	12.33	25.30	2.136	0.166	2.127	0.616	2.582	-0.248	6.11	10.49
23	12.34	25.31	0.293	0.172	0.760	0.614	0.803	-0.216	5.99	10.40
24	12.35	25.32	0.662	0.184	0.284	0.627	0.809	-0.270	6.07	10.40
25	12.36	25.33	0.778	0.173	1.385	0.601	1.239	-0.221	6.06	10.41
30	12.37	25.34	0.217	0.145	0.421	0.560	0.421	-0.122	4.67	14.11
	12.38	25.35	0.247	0.161	0.415	0.549	0.406	-0.132	5.41	15.11
	12.39	25.36	0.220	0.142	0.391	0.535	0.345	-0.112	6.26	16.05
	12.40	25.37	0.272	0.184	0.446	0.519	0.397	-0.123	6.67	16.51
35	12.42	26.1	0.137	0.220	0.369	0.434	0.211	-0.048	3.71	3.95
	12.43	26.2	0.104	0.216	0.348	0.425	0.214	-0.037	5.00	5.94
	12.44	26.3	0.134	0.211	0.330	0.305	0.244	-0.023	6.42	7.95
	12.45	26.4	0.171	0.227	0.394	0.303	0.278	-0.008	7.92	10.04
	12.46	26.5	0.211	0.237	0.403	0.336	0.345	-0.005	9.50	12.15
		26.6								
36	12.47	26.7	0.150	0.211	0.305	0.419	0.180	-0.018	4.64	8.39
	12.48	26.8	0.198	0.159	0.262	0.309	0.146	-0.026	6.08	10.48
	12.49	26.9								
	12.50	26.10	0.250	0.260	0.253	0.356	0.226	-0.013	7.45	12.45
	12.51	26.11	0.299	0.245	0.293	0.361	0.244	0.009	8.84	14.45
	12.52	26.12	0.354	0.173	0.287	0.359	0.299	0.021	9.89	15.96
37	12.53	26.13	0.195	0.224	0.418	0.333	0.397	-0.037	8.14	13.52
38	12.54	26.14	0.595	0.278	0.381	0.329	0.525	-0.004	8.69	14.52
39	12.55	26.15	1.221	0.293	0.912	0.355	1.089	-0.045	9.33	15.53
40	12.56	26.16	0.696	0.291	0.916	0.344	0.696	-0.051	7.50	12.51
41	12.57	26.17	1.340	0.321	1.523	0.354	1.257	-0.069	6.79	11.51

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
42	12.58	26.18								
	12.59	26.19								
	12.60	26.20	0.220	0.290	0.366	0.330	0.345	-0.031	8.15	13.51
43	12.61	26.21	0.958	0.277	0.668	0.349	0.867	-0.022	8.00	13.51
44	12.62	26.22	1.904	0.294	1.495	0.349	1.712	-0.052	7.96	13.55
45	12.63	26.23	1.019	0.276	1.190	0.340	0.912	-0.039	8.23	13.54
47	12.64	26.24	0.189	0.265	0.372	0.335	0.372	-0.053	8.12	13.55
48	12.65	26.25	0.668	0.272	0.879	0.322	0.925	-0.032	8.03	13.52
49	12.66	26.26	0.723	0.267	0.641	0.357	0.436	-0.047	8.16	13.45
51	12.68	27.1	0.110	0.148	0.153	0.421	0.128	0.156	2.48	3.20
	12.69	27.2	0.131	0.161	0.171	0.417	0.128	0.179	3.38	5.31
	12.70	27.3	0.085	0.168	0.134	0.413	0.055	0.110	4.28	7.46
	12.71	27.4	0.101	0.175	0.162	0.415	0.055	0.100	5.16	9.42
	12.72	27.5	0.110	0.176	0.174	0.402	0.095	0.084	6.17	11.54
	12.73	27.6	0.159	0.241	0.214	0.281	0.168	0.048	7.06	13.53
	12.74	27.7	0.165	0.261	0.339	0.333	0.330	-0.001	8.17	15.58
	12.75	27.8	0.168	0.261	0.299	0.360	0.299	-0.025	8.94	16.91
50	12.76	27.9	0.143	0.259	0.250	0.364	0.229	-0.031	6.70	7.21
	12.77	27.10	0.186	0.257	0.269	0.367	0.208	-0.027	7.83	9.20
	12.78	27.11	0.211	0.250	0.198	0.419	0.198	-0.035	8.75	10.68
52	12.79	27.12	0.183	0.255	0.217	0.434	0.226	-0.032	7.51	8.69
53	12.80	27.13	0.409	0.258	0.281	0.377	0.229	-0.015	7.89	9.64
54	12.81	27.14	0.894	0.208	0.757	0.404	0.748	-0.023	8.51	10.72
		27.15								
55	12.82	27.16	0.479	0.240	0.629	0.388	0.620	-0.025	7.05	7.69
57	12.83	27.17	0.122	0.193	0.183	0.440	0.186	-0.033	7.55	8.69
58	12.84	27.18	0.723	0.233	0.562	0.420	0.537	0.008	7.25	8.69
		27.19								
59	12.85	27.20	1.648	0.255	1.416	0.469	1.367	-0.069	7.16	8.75

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
60	12.86	27.21	0.888	0.233	0.928	0.469	0.909	-0.037	7.74	8.67
62	12.87	27.22								
	12.88	27.23	0.125	0.206	0.189	0.397	0.146	-0.062	7.57	8.69
63	12.89	27.24	0.620	0.226	0.635	0.403	0.650	-0.056	7.53	8.69
64	12.90	27.25	0.687	0.247	0.677	0.429	0.549	-0.057	7.54	8.69
66	13.1	28.1	0.131	0.150	0.281	0.433	0.195	-0.026	1.57	6.94
	13.3	28.2	0.089	0.181	0.266	0.434	0.214	-0.080	2.42	9.11
	13.4	28.3	0.113	0.240	0.314	0.434	0.296	-0.096	3.36	11.15
	13.5	28.4	0.067	0.282	0.259	0.484	0.354	-0.127	4.35	13.13
	13.6	28.5	0.104	0.300	0.360	0.493	0.458	-0.146	4.70	13.71
65	13.7	28.6	0.458	0.275	0.757	0.524	0.781	-0.114	2.14	4.46
	13.8	28.7	0.381	0.228	0.647	0.492	0.604	-0.074	2.78	6.16
	13.9	28.8	0.293	0.244	0.549	0.513	0.467	-0.105	3.73	8.27
	13.10	28.9	0.201	0.250	0.421	0.540	0.363	-0.153	4.81	10.22
	13.11	28.10	0.131	0.212	0.259	0.611	0.250	-0.177	5.72	11.61
67	13.12	28.11	0.253	0.118	0.769	0.706	0.812	-0.264	4.29	8.93
68	13.13	28.12	0.366	0.180	0.641	0.682	0.510	-0.258	4.74	9.97
69	13.14	28.13	0.644	0.206	0.818	0.630	0.314	-0.238	5.18	10.96
70	13.15	28.14	0.562	0.129	0.949	0.733	1.123	-0.281	3.92	8.08
71	13.16	28.15	1.031	0.162	1.263	0.705	1.477	-0.274	3.37	6.94
72	13.17	28.16	0.262	0.198	0.677	0.627	0.659	-0.236	4.19	8.88
73	13.18	28.17	0.824	0.226	0.916	0.664	0.348	-0.228	4.07	8.86
74	13.19	28.18	1.559	0.232	1.556	0.619	1.096	-0.229	3.91	8.92
75	13.20	28.19	0.943	0.225	1.114	0.616	1.306	-0.235	4.31	8.91
76	13.21	28.20	1.758	0.250	1.837	0.629	2.069	-0.267	4.39	8.98
77	13.22	28.21	0.244	0.250	0.687	0.603	0.702	-0.240	4.22	8.95
78	13.23	28.22	0.589	0.229	0.275	0.671	0.693	-0.241	4.39	8.97
79	13.24	28.23	0.800	0.257	1.318	0.614	1.202	-0.272	4.17	8.96
80	13.25	28.24	0.366	0.250	0.757	0.580	0.668	-0.240	4.76	7.90

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
81	13.26	28.25	0.311	0.274	0.629	0.563	0.537	-0.220	5.04	8.89
82	13.27	28.26	0.391	0.235	0.378	0.484	0.388	-0.143	0.89	8.79
80A	13.29	29.1	0.116	0.164	0.290	0.456	0.217	0.025	6.91	16.90
	13.30	29.2	0.119	0.171	0.266	0.468	0.201	0.030	7.40	17.84
	13.31	29.3	0.150	0.171	0.272	0.333	0.186	0.024	7.90	18.78
	13.32	29.4	0.122	0.165	0.223	0.335	0.110	0.049	8.42	19.76
	13.33	29.5	0.122	0.160	0.208	0.351	0.107	0.047	8.89	20.71
		29.6								
81A	13.34	29.7	0.107	0.085	0.204	0.354	0.177	0.086	4.86	17.81
	13.35	29.8	0.165	0.186	0.269	0.361	0.153	0.014	5.28	18.75
	13.36	29.9	0.119	0.092	0.201	0.381	0.119	0.022	5.56	19.69
	13.37	29.10	0.110	0.125	0.168	0.384	0.101	0.037	5.92	20.64
	13.38	29.11	0.119	0.136	0.156	0.338	0.092	0.035	6.25	21.66
	13.39	29.12	0.119	0.133	0.156	0.346	0.085	0.021	6.63	22.57
	13.40	29.13	0.089	0.135	0.128	0.344	0.055	0.042	6.95	23.53
	13.41	29.14	0.101	0.189	0.119	0.340	0.058	0.051	7.30	24.52
	13.42	29.15	0.146	0.220	0.122	0.413	0.073	0.013	7.85	25.48
81B	13.43	29.16	0.171	0.122	0.232	0.411	0.119	0.074	0.84	37.19
	13.44	29.17	0.168	0.223	0.208	0.317	0.150	0.075	0.94	38.17
	13.45	29.18	0.110	0.215	0.070	0.399	0.064	0.027	1.00	40.05
	13.46	29.19	0.119	0.233	0.165	0.336	0.104	0.047	1.17	42.07
	13.47	29.20	0.143	0.130	0.113	0.385	0.082	0.011	1.16	43.12
	13.48	29.21	0.134	0.118	0.122	0.399	0.098	0.032	1.32	43.98
87	13.49	29.22	0.137	0.239	0.116	0.455	0.110	0.045	1.01	39.17
88	13.50	29.23	0.815	0.222	0.696	0.382	0.641	0.012	0.67	39.18
89	13.51	29.24	1.804	0.176	1.605	0.455	1.566	-0.009	0.70	39.19
90	13.52	29.25	1.016	0.173	1.004	0.466	0.955	0.010	1.26	39.16
91	13.53	29.26	2.127	0.168	2.005	0.439	1.962	-0.023	1.55	39.28
92	13.54	29.27	0.119	0.184	0.220	0.402	0.156	0.034	1.07	39.15

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
93	13.55	29.28	0.845	0.157	0.787	0.439	0.842	0.013	0.89	39.18
94	13.56	29.29	0.851	0.156	0.815	0.432	0.714	0.015	1.18	39.21
		30.1								
95	13.59	30.2	0.198	0.111	0.125	0.398	0.153	0.026	1.30	49.83
	13.60	30.3	0.204	0.196	0.128	0.393	0.174	0.073	1.31	50.88
	13.61	30.4	0.156	0.159	0.150	0.405	0.113	0.026	1.25	50.40
101	13.62	30.5	0.177	0.146	0.122	0.412	0.128	0.021	1.29	49.82
95A	13.63	30.6	0.189	0.210	0.150	0.389	0.131	0.036	1.27	50.89
101A	13.64	30.7	0.201	0.132	0.183	0.404	0.137	0.022	1.26	49.85
102	13.65	30.8	1.242	0.163	1.132	0.374	1.096	0.000	1.25	49.86
103	13.66	30.9	2.933	0.157	2.628	0.416	2.637	-0.016	1.90	49.92
104	13.67	30.10	1.505	0.159	1.385	0.414	1.303	-0.006	1.50	49.88
106	13.68	30.11	0.198	0.209	0.195	0.455	0.180	0.040	1.31	49.88
107	13.69	30.12	1.349	0.164	1.245	0.393	1.282	-0.014	0.78	49.89
108	13.70	30.13	1.279	0.128	1.160	0.395	1.120	0.003	1.71	49.79
109	13.72	31.1	0.137	0.149	0.211	0.347	0.101	0.012	0.91	38.14
110	13.73	31.2	0.842	0.158	0.717	0.382	0.687	0.006	1.65	38.15
111	13.74	31.3	1.865	0.150	1.642	0.390	1.627	-0.004	2.69	38.17
112	13.75	31.4	0.940	0.149	0.946	0.378	0.885	0.001	1.13	38.17
113	13.76	31.5	1.920	0.160	1.834	0.371	1.791	-0.007	1.98	38.23
114	13.77	31.6	0.308	0.193	0.269	0.390	0.269	-0.029	1.21	51.50
115	13.78	31.7	1.617	0.184	1.431	0.342	1.413	-0.022	2.39	51.49
116	13.79	31.8	2.072	0.189	1.828	0.362	1.813	-0.024	2.82	51.49
117	13.80	31.9	0.558	0.185	0.552	0.373	0.500	0.005	1.10	51.45
118	13.81	31.10	1.917	0.175	1.773	0.369	1.724	0.005	2.20	51.52
128	13.82	31.11	0.388	0.223	0.296	0.404	0.314	-0.019	1.26	51.52
129	13.83	31.12	1.477	0.195	1.349	0.367	1.297	-0.027	2.23	51.51
130	13.84	31.13	2.298	0.187	2.072	0.377	2.057	-0.024	3.06	51.50
123	13.85		0.314	0.191	0.250	0.397	0.256	-0.031	1.18	51.81

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
122	13.86	31.14	0.336	0.169	0.250	0.392	0.262	-0.047	1.14	50.33
124	13.87	31.15	0.150	0.157	0.208	0.360	0.177	0.026	1.25	48.36
122A	13.88	31.16	0.323	0.139	0.360	0.384	0.275	-0.010	1.19	48.35
122B	13.89		0.241	0.197	0.168	0.391	0.168	-0.008	1.16	50.29
124A	13.90	31.17	0.238	0.195	0.198	0.382	0.192	-0.015	1.16	50.33
125	13.91	31.18	0.119	0.157	0.146	0.342	0.104	0.008	1.00	39.68
126	13.92		0.290	0.182	0.262	0.337	0.226	-0.002	1.26	39.69
127	13.93	31.19	0.925	0.167	0.864	0.324	0.787	-0.005	1.90	39.67
119	13.94	31.20	0.089	0.156	0.156	0.308	0.067	0.026	0.97	36.76
120	13.95	31.21	0.232	0.130	0.308	0.325	0.186	0.004	0.97	36.78
121	13.96	31.22	0.122	0.218	0.131	0.305	0.067	0.000	0.96	36.80
131	14.1	32.1	0.104	0.155	0.165	0.415	0.085	0.007	6.33	21.24
132	14.2		0.125	0.145	0.107	0.413	0.082	0.031	6.41	21.24
133	14.3	32.2	0.388	0.102	0.330	0.441	0.323	0.026	6.68	21.24
133A	14.4	32.3	1.056	0.100	0.861	0.382	0.928	0.016	7.35	21.28
134	14.5	32.4	0.580	0.109	0.635	0.387	0.580	0.000	5.72	21.27
135	14.6	32.5	1.239	0.114	1.178	0.383	1.184	-0.021	5.09	21.27
139	14.7	32.6	0.119	0.178	0.195	0.381	0.104	-0.027	6.27	21.34
140	14.8	32.7	0.354	0.117	0.342	0.401	0.299	0.005	6.65	21.26
141	14.9	32.8	1.050	0.123	0.854	0.391	0.934	-0.010	7.30	21.33
142	14.10	32.9	0.647	0.119	0.635	0.388	0.623	-0.012	5.71	21.30
143	14.11	32.10	1.288	0.111	1.218	0.372	1.202	0.005	5.16	21.28
136	14.12	32.11	0.116	0.156	0.180	0.338	0.104	-0.011	6.27	21.25
137	14.13	32.12	0.247	0.129	0.354	0.350	0.226	-0.022	6.09	21.29
138	14.14	32.13	0.070	0.152	0.137	0.347	0.055	-0.016	6.31	21.33
		33.1								
		33.2								
		33.3								
	15.1	34.1								

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
	15.2	34.2								
	15.3	34.3	0.964	0.359	0.836	0.315	0.961	-0.133	1.39	0.07
	15.4	34.4	0.296	0.353	0.351	0.273	0.241	-0.083	0.85	2.41
	15.5	34.5	0.122	0.395	0.180	0.276	0.146	-0.115	0.71	3.38
	15.6	34.6	0.116	0.388	0.162	0.281	0.146	-0.130	0.67	4.47
	15.7	34.7	0.113	0.387	0.156	0.286	0.101	-0.093	0.65	5.52
	15.8	34.8	0.101	0.379	0.092	0.310	0.043	-0.079	0.52	6.61
	15.9	34.9	0.143	0.380	0.107	0.306	0.052	-0.084	0.57	7.67
	15.10	34.10	0.101	0.373	0.085	0.309	0.046	-0.094	0.63	8.63
	15.11	34.11	0.098	0.360	0.092	0.312	0.055	-0.108	0.65	9.64
	15.12	34.12	0.110	0.365	0.101	0.301	0.067	-0.104	0.83	10.70
	15.13	34.13	0.116	0.428	0.150	0.293	0.134	-0.130	0.97	11.73
	15.14	34.14	0.098	0.446	0.159	0.294	0.116	-0.164	1.03	12.70
	15.15	34.15	0.113	0.361	0.119	0.316	0.049	-0.164	1.03	13.72
	15.16	34.16	0.104	0.361	0.107	0.317	0.070	-0.169	1.14	14.71
	15.17	34.17	0.131	0.355	0.131	0.323	0.101	-0.159	1.29	15.74
	15.18	34.18	0.153	0.367	0.113	0.350	0.134	-0.181	1.41	16.62
	15.19	34.19	0.128	0.421	0.156	0.339	0.128	-0.197	1.54	17.58
	15.20	34.20	0.128	0.428	0.180	0.480	0.174	-0.279	0.75	2.19
	15.21	34.21	0.128	0.416	0.189	0.513	0.201	-0.275	0.80	1.72
	15.23	35.1	0.214	0.386	0.195	0.540	0.116	-0.279	0.95	1.16
	15.24	35.2	0.162	0.363	0.235	0.563	0.204	-0.278	1.05	0.61
	15.25	35.3	0.171	0.150	0.159	0.406	0.143	0.016	0.85	-5.69
	15.26	35.4	0.198	0.082	0.165	0.410	0.110	0.079	1.22	-4.61
	15.27	35.5	0.055	0.165	0.092	0.424	0.079	0.050	0.85	-3.69
	15.28	35.6	0.098	0.126	0.174	0.411	0.143	0.031	0.88	-2.61
	15.29	35.7	0.079	0.111	0.171	0.411	0.116	0.028	0.99	-1.51
	15.30	35.8	0.128	0.122	0.192	0.414	0.092	0.028	0.89	-0.33
	15.31	35.9	0.073	0.136	0.168	0.419	0.095	0.023	0.84	0.78

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
	15.32	35.10	0.125	0.111	0.119	0.415	0.073	0.064	0.67	1.76
	15.33	35.11	0.089	0.099	0.125	0.418	0.085	0.052	0.71	2.78
	15.34	35.12	0.092	0.100	0.131	0.412	0.107	0.045	0.71	3.87
	15.35	35.13	0.079	0.098	0.125	0.404	0.119	0.038	0.70	4.95
	15.36	35.14	0.073	0.111	0.116	0.405	0.085	0.041	0.70	5.99
	15.37	35.15	0.061	0.111	0.092	0.406	0.073	0.039	0.70	7.09
	15.38	35.16	0.107	0.207	0.146	0.407	0.140	0.028	0.77	8.15
	15.39	35.17	0.061	0.196	0.125	0.413	0.125	0.025	0.76	9.14
	15.40	35.18	0.055	0.203	0.125	0.413	0.119	0.016	0.76	10.15
	15.41	35.19	0.061	0.207	0.125	0.415	0.079	-0.020	0.77	10.59
	15.42	35.20	0.064	0.204	0.116	0.417	0.079	-0.022	0.75	11.14
	15.43	35.21	0.076	0.218	0.122	0.417	0.079	-0.024	0.76	11.67
	15.44	35.22	0.073	0.225	0.119	0.423	0.082	-0.027	0.75	12.11
	15.45	35.23	0.089	0.215	0.110	0.422	0.098	-0.032	0.77	12.67
	15.46	35.24	0.143	0.213	0.113	0.413	0.067	-0.025	0.70	13.17
	15.47	35.25	0.101	0.213	0.092	0.416	0.073	0.007	0.76	13.63
	15.48	35.26	0.104	0.212	0.089	0.418	0.085	0.002	0.80	14.12
	15.49	35.27	0.079	0.189	0.049	0.421	0.082	0.001	0.83	14.63
		35.28								
	15.50	35.29	0.089	0.195	0.052	0.437	0.085	-0.001	0.83	15.62
	15.51	35.30	0.076	0.188	0.052	0.451	0.082	-0.021	0.90	16.57
	15.54	36.1	0.146	0.232	0.208	0.403	0.159	-0.046	1.09	17.58
		36.2								
	15.55	37.1	0.140	0.233	0.195	0.406	0.153	-0.066	1.11	18.56
	15.57	38.1	0.085	0.176	0.174	0.331	0.140	0.023	0.95	10.21
	15.58	38.2	0.131	0.277	0.089	0.339	0.116	-0.062	1.31	16.73
	15.59	38.3	1.065	0.306	0.879	0.375	1.096	-0.008	1.58	-0.20
	15.60	38.4	0.815	0.302	0.690	0.390	0.708	-0.003	1.43	0.30
	15.61	38.5	0.400	0.282	0.464	0.332	0.500	-0.004	1.26	0.75

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
	15.62	38.6	0.302	0.278	0.385	0.452	0.302	0.022	1.28	1.31
	15.63	38.7	0.278	0.252	0.311	0.446	0.272	0.026	0.90	2.35
	15.64	38.8	0.131	0.246	0.229	0.354	0.186	0.037	1.03	3.34
	15.65	38.9	0.165	0.284	0.223	0.360	0.146	0.027	0.95	4.41
	15.66	38.10	0.140	0.275	0.183	0.374	0.134	0.031	0.85	5.49
	15.67	38.11	0.101	0.256	0.110	0.377	0.079	0.027	0.78	6.53
	15.68	38.12	0.098	0.255	0.119	0.390	0.070	0.028	0.78	7.56
	15.69	38.13	0.110	0.242	0.174	0.380	0.125	0.012	0.65	8.63
	15.70	38.14	0.131	0.280	0.204	0.352	0.165	-0.007	0.71	9.59
	15.71	38.15	0.125	0.300	0.171	0.352	0.137	-0.023	0.78	10.63
	15.72	38.16	0.150	0.291	0.192	0.335	0.153	-0.035	0.82	11.65
	15.73	38.17	0.122	0.316	0.150	0.339	0.113	-0.026	0.86	12.59
	15.74	38.18	0.137	0.326	0.131	0.396	0.143	-0.039	0.94	13.59
	15.75	38.19	0.134	0.347	0.125	0.411	0.146	-0.037	1.07	14.59
	15.76	38.20	0.140	0.352	0.146	0.423	0.134	-0.047	1.10	15.64
	15.77	38.21	0.186	0.356	0.171	0.419	0.165	-0.035	1.22	16.55
	15.78	38.22	0.122	0.397	0.168	0.319	0.101	-0.046	0.74	10.61
	15.80	39.1	0.400	0.486	0.391	0.270	0.284	-0.070	1.07	0.27
	15.81	39.2	0.195	0.230	0.180	0.500	0.116	0.013	0.70	9.51
	15.82	39.3	0.247	0.226	0.305	0.409	0.333	0.059	1.33	0.17
	15.83	39.4	0.314	0.229	0.375	0.359	0.345	0.045	0.93	2.78
	15.84	39.5	0.092	0.205	0.204	0.462	0.113	0.041	0.86	4.88
	15.85	39.6	0.168	0.222	0.256	0.477	0.183	0.044	0.79	6.96
	15.86	39.7	0.183	0.227	0.296	0.496	0.183	0.020	0.77	9.52
	15.87	39.8	0.085	0.260	0.186	0.485	0.073	0.005	0.76	11.08
	15.88	39.9	0.125	0.270	0.204	0.472	0.119	-0.006	0.95	13.02
	15.89	39.10	0.211	0.313	0.201	0.425	0.180	-0.027	1.20	15.02
	15.91	40.1	0.174	0.334	0.220	0.432	0.186	-0.034	1.37	17.02
	15.92	40.2	0.165	0.416	0.208	0.320	0.058	-0.061	0.66	10.63

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
	16.1	41.1	0.122	0.252	0.165	0.459	0.125	0.068	1.18	15.06
	16.2	42.1	0.162	0.280	0.226	0.394	0.119	0.010	1.21	15.05
	16.3	42.2	0.089	0.401	0.122	0.296	0.189	0.051	0.75	5.36
	16.4	42.3	0.177	0.335	0.180	0.259	0.241	0.113	0.77	5.22
	16.5	42.4	0.146	0.210	0.162	0.206	0.214	0.253	0.69	3.82
	16.6	42.5	0.146	0.217	0.186	0.264	0.140	0.189	0.64	3.55
	16.7	42.6	0.107	0.209	0.146	0.287	0.116	0.178	0.65	3.48
	16.8	42.7	0.122	0.188	0.186	0.300	0.110	0.164	0.71	5.92
	16.9	42.8	0.110	0.202	0.183	0.317	0.195	0.143	0.75	7.86
	16.10	42.9	0.128	0.235	0.180	0.305	0.116	0.159	0.73	9.81
	16.11	42.10	0.125	0.256	0.177	0.308	0.113	0.146	0.75	11.90
	16.12	42.11	0.150	0.285	0.180	0.310	0.101	0.140	0.79	13.79
	16.13	42.12	0.116	0.281	0.168	0.322	0.119	0.113	0.83	15.79
	16.14	42.13	0.143	0.298	0.156	0.312	0.156	0.083	0.89	16.78
	16.15	42.14	0.095	0.182	0.177	0.314	0.128	0.268	0.73	3.59
	16.16	42.15	0.113	0.196	0.186	0.337	0.128	0.150	0.86	3.75
	16.17	42.16	0.095	0.204	0.104	0.342	0.067	0.165	0.89	4.69
	16.18	42.17	0.058	0.180	0.085	0.357	0.070	0.183	0.84	5.93
	16.19	42.18	0.055	0.164	0.098	0.352	0.064	0.184	0.85	7.89
	16.20	42.19	0.079	0.166	0.101	0.365	0.085	0.188	0.86	9.90
	16.21	42.20	0.079	0.185	0.095	0.376	0.092	0.181	0.85	11.91
	16.22	42.21	0.085	0.190	0.104	0.367	0.085	0.160	1.00	13.90
	16.23	42.22	0.119	0.222	0.122	0.371	0.119	0.122	1.05	15.88
	16.24	42.23	0.159	0.284	0.110	0.387	0.153	-0.025	1.15	17.90
	16.25	42.24	0.183	0.369	0.220	0.352	0.189	0.032	1.46	19.81
	16.26	42.25	0.177	0.303	0.143	0.335	0.211	0.084	1.64	21.65
			0.235	0.167	0.171	0.413	0.211	0.052	1.60	23.70

Gimbal and Pitch Link Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Gimbal 1 Vibratory lb.	Gimbal 1 Mean lb.	Gimbal 2 Vibratory lb.	Gimbal 2 Mean lb.	Gimbal 3 Vibratory lb.	Gimbal 3 Mean lb.	Pitch Vibratory lb.	Pitch Mean lb.
49	12.67									
64	12.91		0.043	-0.371	0.043	-0.154	0.046	1.090	0.04	-0.71
82	13.28		0.046	-0.643	0.043	0.029	0.055	1.188	0.04	-0.70
94	13.57		0.052	-0.532	0.046	0.031	0.049	1.198	0.05	-0.43
94	13.58		0.058	-0.259	0.052	-0.551	0.046	1.469	0.06	-0.88
108	13.71		0.055	-0.260	0.058	-0.553	0.055	1.465	0.05	-0.88
	13.97		0.043	-0.649	0.049	-0.003	0.052	1.267	0.06	-0.50
138	14.17		0.046	-0.752	0.049	-0.011	0.058	1.349	0.06	-0.91
	15.79		0.021	-0.727	0.031	-0.108	0.027	1.296	0.05	-0.86
	15.90		0.040	-0.153	0.043	-0.073	0.040	0.995	0.06	-0.85
	15.93		0.058	-1.066	0.046	0.909	0.052	0.909	0.06	-0.41
			0.034	-0.362	0.034	-0.091	0.037	1.124	0.06	-0.96

APPENDIX J

Blade Flatwise Loads

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
		24.1										
		24.2										
2	12.2	25.1	134.50	-179.00	44.48	-121.00	1.186	0.080	24.68	-24.99	4.724	19.920
	12.3	25.2	154.10	-106.30	73.50	-74.01	0.938	0.071	25.47	-20.91	8.339	15.320
	12.4		195.90	-53.84	103.90	-34.47	1.046	0.062	24.39	-17.75	13.880	11.730
8	12.5	25.3	166.60	-123.90	67.59	-85.32	1.046	0.092	25.93	-21.99	6.532	16.100
9	12.6	25.4	156.00	-79.88	72.44	-58.34	1.078	0.073	25.36	-19.87	7.652	13.470
10	12.7	25.5	146.20	-32.68	71.53	-23.79	1.143	0.077	25.83	-17.35	11.120	10.610
11	12.8	25.6	178.90	-170.70	64.17	-112.00	1.003	0.093	25.25	-24.20	6.532	18.810
12	12.9	25.7	181.70	-218.10	59.84	-138.60	1.067	0.092	23.86	-26.39	6.965	21.750
18	12.10	28.8	155.80	-128.60	62.32	-89.08	1.078	0.075	26.08	-22.44	6.806	16.580
19	12.11	25.9	140.80	-114.80	57.60	-83.06	0.992	0.078	27.11	-22.30	5.665	15.870
20	12.12	25.10	131.60	-96.01	61.84	-71.99	0.981	0.071	28.37	-21.83	6.130	14.940
21	12.13	25.11	178.60	-138.20	75.72	-91.15	1.014	0.065	24.95	-22.55	9.354	17.000
22	12.14	25.12	202.80	-149.20	87.22	-94.37	1.067	0.076	24.30	-22.77	11.630	17.430
26	12.15	25.13	151.20	-117.90	62.36	-82.61	1.111	0.076	25.63	-22.18	6.902	15.980
27	12.16	25.14	192.00	-116.10	77.18	-78.14	1.067	0.071	26.64	-22.23	6.426	15.970
28	12.17	25.15	119.60	-124.40	52.75	-89.40	1.057	0.079	25.64	-22.48	7.916	16.340
1	12.18	25.16	99.91	-168.50	33.88	-130.60	1.143	0.150	31.73	-31.38	13.730	21.660
	12.19	25.17	91.86	-103.80	33.17	-83.79	0.970	0.079	32.05	-27.23	12.180	17.530
	12.20	25.18	96.63	-41.65	47.49	-35.18	1.100	0.067	32.18	-23.09	12.420	13.390
	12.21	25.19	97.67	-41.78	45.02	-35.47	0.960	0.054	32.08	-23.05	12.190	13.310
	12.22	25.20	133.70	17.45	75.79	12.33	1.165	0.051	28.70	-18.71	16.860	9.248
	12.23	25.21	207.90	83.95	116.80	51.74	1.046	0.068	25.73	-13.58	22.290	5.364
3	12.24	25.22	132.90	-3.73	85.99	-3.57	0.960	0.058	28.90	-20.33	17.390	11.190
4	12.25	25.23	129.20	33.75	81.32	23.27	1.003	0.061	27.84	-17.69	18.270	8.634
5	12.26	25.24	140.00	80.44	83.28	53.38	0.960	0.058	29.25	-14.39	22.070	5.830
6	12.27	25.25	129.80	-43.73	80.79	-34.77	1.111	0.051	30.88	-22.85	17.880	13.620
7	12.28	25.26	126.20	-78.42	75.03	-61.81	1.154	0.075	32.34	-25.02	18.020	15.950
13	12.29	25.27	133.90	0.16	86.60	-0.47	0.852	0.040	28.52	-20.20	17.110	10.990
14	12.30	25.28	106.20	11.05	70.44	7.81	1.089	0.067	29.09	-19.73	17.420	10.330
15	12.31		84.75	25.18	65.96	18.41	0.992	0.064	30.50	-19.09	17.930	9.601
16	12.32	25.29	169.10	-11.02	108.40	-9.09	1.035	0.055	30.47	-20.60	18.840	11.600
17	12.33	25.30	194.60	-22.01	119.20	-16.95	0.960	0.076	30.50	-21.07	20.850	12.240
23	12.34	25.31	135.60	-0.43	86.82	-1.03	1.089	0.043	28.96	-20.38	17.420	11.110
24	12.35	25.32	144.60	1.71	80.79	0.23	1.154	0.062	29.50	-20.38	17.690	11.030
25	12.36	25.33	134.40	-0.76	95.51	-1.83	1.186	0.051	29.47	-20.44	18.930	11.170
30	12.37	25.34	159.50	-197.50	51.79	-128.10	1.132	0.093	31.58	-26.91	6.088	21.300
	12.38	25.35	167.90	-162.00	63.58	-107.30	1.175	0.084	31.80	-25.01	8.106	19.030
	12.39	25.36	183.60	-128.20	85.05	-82.63	1.294	0.070	31.65	-22.97	10.530	16.960
	12.40	25.37	191.60	-107.20	92.76	-68.48	1.024	0.076	30.36	-21.83	11.180	15.610

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
35	12.42	26.1	35.36	-219.70	26.14	-147.00	1.003	0.128	11.26	-23.20	6.329	9.318
	12.43	26.2	29.82	-167.90	27.81	-111.00	0.970	0.133	11.72	-20.24	6.318	8.555
	12.44	26.3	30.01	-118.00	37.17	-75.37	0.960	0.127	12.08	-17.02	6.086	7.675
	12.45	26.4	37.08	-63.37	53.46	-31.89	0.992	0.116	13.58	-12.61	5.262	6.579
	12.46	26.5	65.50	-17.57	72.99	4.19	1.165	0.115	15.35	-8.95	5.483	5.836
		26.6										
36	12.47	26.7	36.74	-214.40	27.22	-139.40	0.949	0.142	9.07	-20.36	5.198	9.789
	12.48	26.8	36.72	-159.20	37.71	-100.90	0.852	0.137	10.47	-17.20	4.607	8.889
	12.49	26.9										
	12.50	26.10	44.11	-104.10	56.85	-59.99	1.132	0.129	12.19	-13.55	4.522	7.895
	12.51	26.11	69.79	-50.89	79.05	-18.01	0.873	0.123	15.06	-9.72	4.649	6.815
	12.52	26.12	92.88	-9.03	91.83	13.60	0.873	0.094	16.18	-6.89	5.367	6.141
37	12.53	26.13	46.32	-73.30	51.72	-35.15	1.078	0.089	12.47	-11.14	5.346	6.988
38	12.54	26.14	40.23	-39.21	54.07	-9.19	0.830	0.084	14.06	-8.91	5.547	6.358
39	12.55	26.15	47.70	-5.19	64.92	16.05	0.863	0.079	15.64	-6.65	7.089	5.832
40	12.56	26.16	52.84	-107.70	48.59	-61.60	1.132	0.092	11.35	-13.27	5.621	7.729
41	12.57	26.17	62.78	-144.10	43.76	-87.52	1.111	0.112	10.27	-15.33	5.843	8.345
42	12.58	26.18										
	12.59	26.19										
	12.60	26.20	45.30	-75.16	50.54	-36.87	1.024	0.089	12.73	-11.00	5.452	6.970
43	12.61	26.21	40.55	-62.43	48.28	-28.36	1.197	0.080	13.80	-10.35	5.219	6.779
44	12.62	26.22	48.79	-52.72	52.44	-21.31	1.154	0.077	14.79	-9.78	5.420	6.585
45	12.63	26.23	61.32	-83.86	65.95	-42.16	1.186	0.100	12.30	-11.27	5.547	7.125
47	12.64	26.24	45.98	-75.22	48.99	-36.78	0.981	0.088	12.19	-10.89	5.631	6.967
48	12.65	26.25	62.32	-73.94	43.76	-37.39	1.014	0.090	10.87	-10.98	5.557	7.030
49	12.66	26.26	49.28	-80.92	59.27	-39.67	1.089	0.092	15.40	-10.91	5.188	7.079
51	12.68	27.1	22.02	-169.50	27.06	-115.60	1.078	0.212	6.49	-17.99	3.846	9.071
	12.69	27.2	23.05	-118.30	31.48	-78.38	1.175	0.212	6.85	-14.80	2.620	8.175
	12.70	27.3	25.44	-62.71	39.20	-35.20	1.024	0.222	7.76	-10.89	2.388	7.175
	12.71	27.4	41.59	-11.80	48.96	6.47	1.121	0.212	8.22	-6.99	1.722	6.139
	12.72	27.5	55.58	40.02	58.54	47.59	0.960	0.149	8.90	-3.23	2.409	5.143
	12.73	27.6	58.60	92.62	57.62	81.95	1.143	0.140	9.61	-0.21	2.525	4.896
	12.74	27.7	79.24	145.80	71.10	119.20	1.057	0.135	10.66	3.23	3.275	4.733
	12.75	27.8	99.17	179.70	83.31	142.70	1.100	0.138	11.70	5.45	3.413	4.727
50	12.76	27.9	37.42	37.95	52.65	40.94	1.100	0.178	9.92	-4.82	5.082	4.767
	12.77	27.10	53.31	83.40	59.46	75.42	1.035	0.153	11.00	-1.40	4.427	4.462
	12.78	27.11	69.09	114.40	70.82	98.46	1.283	0.160	12.23	0.96	4.554	4.484
52	12.79	27.12	50.13	71.74	57.38	66.62	1.143	0.166	10.78	-2.27	4.501	4.661
53	12.80	27.13	47.43	94.61	55.29	83.57	1.024	0.149	10.99	-0.59	5.040	4.512
54	12.81	27.14	56.20	119.60	56.85	102.00	1.143	0.150	11.69	1.27	5.325	4.476
		27.15										

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
55	12.82	27.16	49.38	47.34	56.12	48.60	1.046	0.165	9.95	-4.17	4.533	4.758
57	12.83	27.17	52.23	72.18	58.61	66.96	1.024	0.146	10.90	-2.34	4.691	4.601
58	12.84	27.18	34.66	77.38	44.68	70.58	0.981	0.155	10.85	-2.07	5.008	4.615
		27.19										
59	12.85	27.20	33.94	80.46	51.69	72.80	1.046	0.148	11.19	-1.86	5.483	4.501
60	12.86	27.21	64.97	64.84	68.51	62.02	1.143	0.164	10.84	-2.80	3.994	4.680
62	12.87	27.22										
	12.88	27.23	54.08	70.21	58.84	65.80	1.089	0.141	11.01	-2.49	4.670	4.669
63	12.89	27.24	41.23	71.50	51.72	66.45	1.035	0.161	9.91	-2.50	4.776	4.581
64	12.90	27.25	66.46	67.48	63.24	64.33	1.111	0.136	12.27	-2.61	4.300	4.698
66	13.1	28.1	40.54	-178.10	14.57	-129.90	1.067	0.197	14.10	-28.86	4.820	20.200
	13.3	28.2	55.88	-97.68	22.07	-70.69	0.970	0.188	13.61	-24.27	4.462	14.940
	13.4	28.3	96.44	-24.58	46.88	-13.82	1.024	0.166	13.65	-19.79	6.308	10.040
	13.5	28.4	149.10	45.92	81.45	38.85	1.240	0.151	13.91	-14.93	9.767	5.365
	13.6	28.5	180.80	67.73	98.65	51.26	1.057	0.167	14.53	-13.43	11.590	4.010
65	13.7	28.6	60.13	-106.90	31.88	-78.73	1.035	0.201	23.66	-28.92	13.210	16.430
	13.8	28.7	56.39	-52.32	30.73	-36.44	1.165	0.185	21.16	-24.94	13.030	12.810
	13.9	28.8	84.30	14.82	44.95	16.14	1.143	0.176	18.70	-19.77	12.450	8.175
	13.10	28.9	119.80	78.47	60.41	62.36	0.906	0.153	19.66	-14.41	14.210	3.772
	13.11	28.10	168.20	128.70	77.45	89.67	1.046	0.143	20.24	-10.13	15.790	0.583
67	13.12	28.11	118.70	35.17	75.49	30.92	1.024	0.178	20.94	-17.83	15.290	7.004
68	13.13	28.12	123.70	70.32	71.47	53.90	0.873	0.165	20.50	-14.91	14.170	4.539
69	13.14	28.13	128.10	106.70	68.86	77.49	1.014	0.163	21.70	-11.90	16.380	2.004
70	13.15	28.14	115.60	3.08	73.44	7.48	0.970	0.166	21.42	-20.29	15.170	9.073
71	13.16	28.15	103.60	-38.99	62.99	-25.14	0.884	0.198	22.48	-23.39	14.310	11.790
72	13.17	28.16	109.90	30.26	70.34	28.68	1.111	0.171	19.70	-18.15	14.900	7.028
73	13.18	28.17	94.93	34.01	58.46	31.22	0.992	0.161	20.17	-17.96	13.160	6.814
74	13.19	28.18	85.79	41.28	55.00	36.68	1.067	0.180	21.26	-17.50	13.590	6.338
75	13.20	28.19	131.10	22.21	81.47	22.44	1.100	0.175	21.28	-18.52	15.910	7.403
76	13.21	28.20	151.80	17.60	94.11	18.46	1.165	0.173	22.13	-18.73	16.540	7.612
77	13.22	28.21	112.10	28.27	71.45	27.51	0.873	0.167	19.97	-18.22	15.150	6.995
78	13.23	28.22	111.90	30.92	65.00	29.41	1.067	0.162	19.44	-18.20	13.160	6.948
79	13.24	28.23	121.50	26.14	78.27	25.53	1.143	0.168	21.02	-18.26	15.270	7.054
80	13.25	28.24	129.80	60.68	73.68	48.92	0.927	0.171	21.25	-13.81	11.170	4.837
81	13.26	28.25	145.40	93.61	74.29	70.24	0.970	0.155	22.89	-11.19	14.040	2.785
82	13.27	28.26	123.10	18.22	69.87	21.92	1.035	0.166	13.59	-9.94	9.282	8.016
80A	13.29	29.1	32.26	-115.50	18.59	-54.25	1.175	0.082	4.21	-13.63	2.352	9.065
	13.30	29.2	32.24	-103.50	20.17	-47.40	1.132	0.070	4.72	-12.00	2.786	7.999
	13.31	29.3	35.71	-91.13	21.76	-40.61	0.895	0.072	4.99	-10.35	2.807	7.095
	13.32	29.4	41.92	-76.31	23.95	-32.42	0.949	0.076	5.29	-8.62	3.368	6.214
	13.33	29.5	45.39	-63.67	26.37	-24.83	0.960	0.069	5.43	-7.26	2.765	5.738

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
		29.6										
81A	13.34	29.7	27.16	-131.20	16.10	-57.48	1.305	0.126	3.88	-14.13	2.712	9.728
	13.35	29.8	34.84	-116.80	19.22	-50.28	0.884	0.096	4.73	-12.38	3.008	8.621
	13.36	29.9	35.60	-100.60	19.46	-42.35	1.132	0.067	4.63	-10.48	2.924	7.465
	13.37	29.10	39.47	-83.79	21.78	-34.20	1.089	0.036	4.90	-8.63	2.786	6.391
	13.38	29.11	41.71	-68.26	23.43	-26.02	1.111	0.048	4.67	-6.93	2.712	5.630
	13.39	29.12	44.90	-53.70	26.11	-17.28	1.003	0.028	4.32	-5.56	1.970	5.281
	13.40	29.13	45.49	-39.17	28.09	-7.41	1.024	0.049	4.17	-4.31	1.547	5.097
	13.41	29.14	46.79	-23.10	31.28	4.33	1.100	0.031	4.61	-2.97	1.822	5.003
	13.42	29.15	55.98	-7.05	36.47	15.61	1.089	0.045	5.54	-1.78	2.129	5.101
81B	13.43	29.16	62.06	-115.70	29.83	-41.51	0.906	0.022	7.05	-6.50	5.074	9.281
	13.44	29.17	57.51	-83.76	28.79	-27.62	1.035	0.020	6.55	-3.13	4.354	7.080
	13.45	29.18	55.58	-22.15	34.99	3.00	0.852	-0.011	5.38	2.77	2.627	4.361
	13.46	29.19	68.95	47.40	40.35	47.57	0.884	0.031	7.73	7.68	4.915	3.779
	13.47	29.20	68.63	82.02	40.40	69.15	1.067	0.027	8.27	10.54	5.190	2.874
	13.48	29.21	75.46	110.80	41.97	86.18	1.165	0.018	8.82	13.15	5.900	1.848
87	13.49	29.22	54.49	-41.06	33.65	-13.93	1.121	-0.012	6.05	0.21	3.082	5.931
88	13.50	29.23	46.26	-42.65	25.26	-14.87	1.024	-0.001	5.56	0.58	3.750	5.666
89	13.51	29.24	68.80	-42.89	34.38	-13.73	1.046	-0.003	6.51	0.52	4.767	5.899
90	13.52	29.25	71.29	-41.48	47.85	-12.84	0.895	0.010	8.44	0.28	4.968	6.365
91	13.53	29.26	100.90	-40.61	62.82	-9.85	0.949	0.033	11.03	0.41	6.419	6.656
92	13.54	29.27	56.26	-45.30	33.89	-14.69	0.927	0.007	5.93	0.74	3.464	5.862
93	13.55	29.28	54.92	-44.94	34.40	-14.80	1.078	0.021	6.89	1.05	4.248	5.671
94	13.56	29.29	75.38	-43.90	44.72	-12.89	1.035	0.027	7.95	0.92	4.269	6.074
		30.1										
95	13.59	30.2	94.64	-50.55	53.63	-16.15	1.046	0.038	11.65	4.96	6.832	5.629
	13.60	30.3	90.92	11.74	58.21	18.71	0.949	0.012	10.84	11.35	4.957	3.308
	13.61	30.4	92.43	-15.23	57.06	0.43	1.089	0.016	11.03	9.37	5.519	4.113
101	13.62	30.5	95.86	-47.04	56.07	-17.87	1.035	0.032	12.15	6.79	6.663	5.777
95A	13.63	30.6	90.71	8.34	59.22	15.14	1.100	0.043	11.28	13.11	5.201	3.220
101A	13.64	30.7	97.98	-46.94	58.87	-18.16	0.852	0.051	12.40	7.89	6.938	5.808
102	13.65	30.8	95.73	-48.52	51.68	-19.09	0.981	0.064	12.54	8.28	7.701	5.665
103	13.66	30.9	135.10	-43.43	70.60	-13.22	1.208	0.067	13.85	8.77	8.463	5.970
104	13.67	30.10	135.10	-42.57	82.91	-14.06	1.294	0.088	16.37	8.89	9.629	5.975
106	13.68	30.11	92.82	-43.34	55.75	-16.86	0.992	0.065	12.00	9.66	6.652	5.227
107	13.69	30.12	98.67	-42.45	59.60	-16.13	1.294	0.045	14.10	10.02	8.283	5.405
108	13.70	30.13	134.90	-44.69	78.35	-16.20	0.992	0.081	16.24	9.64	8.644	5.882
109	13.72	31.1	67.35	-91.50	30.91	-29.18	1.262	-0.026	7.13	-5.73	4.755	7.857
110	13.73	31.2	63.49	-86.93	30.12	-28.48	1.035	-0.023	7.00	-4.96	5.113	7.559
111	13.74	31.3	74.19	-85.27	35.67	-28.25	0.949	-0.010	8.48	-4.78	5.683	7.563
112	13.75	31.4	77.39	-84.61	39.07	-27.28	1.175	-0.008	8.13	-4.76	4.934	7.919

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
113	13.76	31.5	102.70	-77.34	52.07	-23.60	1.100	-0.030	9.81	-4.37	5.799	8.086
114	13.77	31.6	79.13	30.55	51.48	31.08	1.089	-0.029	10.07	12.52	4.555	3.328
115	13.78	31.7	95.40	32.57	56.44	31.81	0.992	-0.034	10.86	13.18	4.544	3.368
116	13.79	31.8	110.90	33.50	65.38	32.42	1.111	-0.032	11.20	13.71	5.240	3.262
117	13.80	31.9	116.50	32.15	74.03	30.38	0.992	-0.013	13.26	14.33	6.600	2.938
118	13.81	31.10	168.80	41.91	100.70	35.90	0.981	-0.013	17.50	15.34	8.972	2.547
128	13.82	31.11	77.92	31.77	51.29	31.16	0.992	-0.026	10.09	15.10	4.671	3.332
129	13.83	31.12	93.54	32.35	55.51	30.87	1.024	-0.011	10.32	15.45	5.240	3.313
130	13.84	31.13	115.40	33.70	67.12	31.57	0.949	0.000	11.02	15.86	5.419	3.224
123	13.85		81.24	47.92	51.30	41.36	1.067	-0.014	10.61	18.42	5.019	2.761
122	13.86	31.14	68.37	44.40	47.30	35.83	0.895	-0.005	9.64	17.21	4.765	3.468
124	13.87	31.15	80.88	34.65	56.44	27.34	0.992	0.025	9.95	15.75	4.818	3.734
122A	13.88	31.16	102.00	-46.37	61.59	-20.42	1.154	0.072	12.74	8.67	6.632	6.459
122B	13.89		84.01	41.31	54.12	36.08	1.057	0.025	10.23	18.30	5.124	3.155
124A	13.90	31.17	83.72	103.70	51.25	76.71	1.089	0.007	11.08	23.04	6.400	1.559
125	13.91	31.18	56.61	-19.40	38.55	-8.96	1.078	0.054	6.79	8.77	3.195	5.620
126	13.92		49.00	-21.86	32.60	-9.13	1.014	0.038	6.45	8.71	3.332	5.494
127	13.93	31.19	54.16	-22.12	31.05	-8.69	1.272	0.044	6.42	8.57	3.764	5.506
119	13.94	31.20	49.51	-29.38	33.66	-13.58	1.089	0.073	6.22	6.31	3.311	5.915
120	13.95	31.21	65.83	-108.60	36.98	-52.39	1.089	0.098	8.63	-2.49	6.284	10.890
121	13.96	31.22	47.49	33.10	35.31	29.67	0.992	-0.018	5.38	10.25	2.815	4.924
131	14.1	32.1	36.32	-65.04	23.19	-26.69	1.046	0.064	4.43	-7.35	2.603	5.985
132	14.2		32.86	-62.47	20.90	-26.18	1.208	0.070	4.18	-7.27	2.329	5.965
133	14.3	32.2	24.23	-55.38	17.16	-24.28	1.175	0.066	3.80	-7.03	1.981	5.888
133A	14.4	32.3	34.61	-47.67	22.00	-20.49	1.143	0.091	4.10	-6.67	2.108	5.796
134	14.5	32.4	45.91	-67.19	27.61	-29.22	1.078	0.094	5.31	-8.16	3.056	6.548
135	14.6	32.5	55.69	-71.95	32.24	-30.77	1.121	0.095	5.91	-8.61	3.172	6.965
139	14.7	32.6	36.72	-61.94	22.73	-27.49	1.240	0.045	4.63	-7.69	2.508	6.145
140	14.8	32.7	23.10	-53.99	14.98	-23.54	1.121	0.048	3.61	-7.05	2.361	5.809
141	14.9	32.8	30.17	-44.99	18.29	-18.82	1.132	0.033	3.53	-6.52	1.686	5.581
142	14.10	32.9	48.49	-66.83	28.53	-28.72	1.078	0.056	5.42	-8.31	2.930	6.564
143	14.11	32.10	58.33	-71.17	33.22	-30.12	1.262	0.075	6.12	-8.75	3.720	6.949
136	14.12	32.11	38.33	-61.18	22.85	-27.10	1.067	0.049	4.55	-7.80	2.392	6.112
137	14.13	32.12	37.73	-110.00	21.37	-50.14	0.960	0.077	5.31	-12.89	3.078	9.042
138	14.14	32.13	41.44	-20.60	27.14	0.13	1.067	0.030	4.28	-4.77	1.581	5.496
		33.1										
		33.2										
		33.3										
	15.1	34.1										
	15.2	34.2										
	15.3	34.3	77.81	-183.30	30.75	-122.60	1.003	0.131	16.00	-15.09	15.620	18.110

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
	15.4	34.4	42.10	-109.80	21.21	-80.85	1.024	0.106	5.43	-14.33	7.597	9.436
	15.5	34.5	42.53	-97.05	20.67	-71.99	0.992	0.108	4.34	-13.60	5.806	10.440
	15.6	34.6	45.69	-80.55	25.55	-60.26	0.798	0.118	3.18	-12.80	3.003	11.570
	15.7	34.7	51.44	-64.27	29.36	-46.04	0.981	0.121	3.07	-12.06	3.045	11.770
	15.8	34.8	46.42	-45.36	26.33	-33.88	0.938	0.124	3.25	-11.35	3.330	11.310
	15.9	34.9	49.18	-25.95	27.11	-19.31	1.186	0.100	3.64	-10.82	3.288	10.150
	15.10	34.10	64.11	-3.59	35.04	-3.33	1.046	0.079	4.36	-10.13	4.489	8.659
	15.11	34.11	73.00	20.07	41.01	14.78	0.895	0.058	4.88	-8.96	5.816	7.401
	15.12	34.12	101.00	46.35	58.63	34.76	0.960	0.069	4.87	-7.59	6.891	5.914
	15.13	34.13	127.30	74.87	75.00	56.41	1.057	0.053	5.01	-5.94	8.440	4.284
	15.14	34.14	133.50	106.00	78.43	78.77	0.960	0.049	4.69	-3.91	8.946	2.362
	15.15	34.15	134.10	138.10	71.33	100.90	1.143	0.059	5.01	-1.97	10.370	0.562
	15.16	34.16	153.10	171.30	70.16	118.30	0.970	0.052	5.28	0.22	12.180	-1.470
	15.17	34.17	171.60	209.10	72.77	136.60	0.938	0.055	5.04	2.87	13.940	-3.735
	15.18	34.18	193.40	242.50	81.79	154.40	1.035	0.072	5.48	5.20	15.520	-5.793
	15.19	34.19	218.40	281.80	87.64	173.20	1.143	0.040	5.91	7.84	17.010	-7.985
	15.20	34.20	43.34	-114.30	21.52	-81.95	1.218	0.157	4.42	-14.93	7.218	8.968
	15.21	34.21	44.82	-119.00	22.08	-85.16	1.175	0.156	5.26	-16.04	7.165	8.625
	15.23	35.1	36.76	-126.70	17.80	-90.98	1.035	0.156	6.56	-17.57	8.451	8.735
	15.24	35.2	35.16	-136.90	18.25	-98.18	0.938	0.154	8.09	-18.92	9.230	9.337
	15.25	35.3	25.72	-160.70	16.28	-85.78	1.024	0.171	3.52	-16.54	3.646	5.867
	15.26	35.4	25.50	-145.30	15.59	-76.53	0.992	0.155	3.37	-15.10	4.206	6.480
	15.27	35.5	20.84	-132.60	13.54	-68.42	1.186	0.162	2.51	-14.10	2.452	6.969
	15.28	35.6	25.72	-123.80	14.07	-63.18	1.078	0.157	1.91	-13.53	2.388	8.267
	15.29	35.7	25.74	-113.40	15.52	-57.36	0.992	0.166	1.81	-13.15	1.395	9.111
	15.30	35.8	23.03	-101.10	14.61	-50.13	0.949	0.172	1.82	-12.49	1.289	9.361
	15.31	35.9	26.66	-88.70	16.04	-43.03	1.035	0.172	1.83	-11.93	1.585	9.310
	15.32	35.10	22.09	-76.19	14.42	-35.46	0.917	0.131	1.72	-11.24	1.416	9.146
	15.33	35.11	28.13	-61.37	17.26	-26.48	1.154	0.135	2.29	-10.43	1.965	8.981
	15.34	35.12	30.77	-44.37	19.59	-15.79	0.949	0.158	2.66	-9.29	2.124	8.784
	15.35	35.13	33.64	-26.69	22.03	-3.58	1.165	0.137	3.36	-7.89	2.261	8.509
	15.36	35.14	31.56	-7.94	22.29	9.98	1.208	0.132	3.19	-6.20	2.293	8.270
	15.37	35.15	32.15	12.09	22.60	25.11	1.154	0.143	3.41	-4.39	2.251	7.916
	15.38	35.16	39.61	32.42	23.14	38.95	0.917	0.152	3.21	-2.76	2.483	7.635
	15.39	35.17	41.12	52.99	21.33	52.58	1.003	0.146	2.94	-1.03	2.293	7.582
	15.40	35.18	42.59	74.87	21.78	66.21	1.035	0.141	3.08	0.45	2.568	7.443
	15.41	35.19	40.91	84.51	21.26	72.07	1.229	0.152	2.95	1.12	2.684	7.510
	15.42	35.20	41.70	96.44	21.87	79.21	1.143	0.138	2.92	1.86	2.441	7.796
	15.43	35.21	44.04	109.30	22.98	86.91	1.089	0.140	3.03	2.82	2.673	7.644
	15.44	35.22	45.02	119.50	23.23	92.97	1.067	0.134	3.40	3.54	2.758	7.553
	15.45	35.23	45.87	132.40	23.91	100.40	0.917	0.129	3.43	4.41	3.117	7.576

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
	15.46	35.24	35.80	145.50	20.77	108.20	0.949	0.141	3.37	5.34	2.790	7.590
	15.47	35.25	40.31	157.20	22.27	115.00	0.895	0.143	3.67	6.13	2.684	7.591
	15.48	35.26	39.35	168.10	21.76	121.50	1.024	0.159	3.99	6.91	3.234	7.524
	15.49	35.27	39.12	180.20	21.76	128.50	1.035	0.151	3.88	7.78	3.096	7.599
		35.28										
	15.50	35.29	41.46	204.40	23.17	142.50	1.057	0.157	4.15	9.45	3.064	7.614
	15.51	35.30	45.13	226.50	23.52	155.50	1.111	0.148	4.25	11.05	3.677	7.934
	15.54	36.1	60.45	248.60	32.26	168.30	1.078	0.161	5.27	12.67	3.350	7.932
		36.2										
	15.55	37.1	62.43	270.20	33.87	180.80	0.938	0.153	5.76	14.22	3.709	8.201
	15.57	38.1	44.72	93.53	22.96	77.95	1.121	0.172	2.28	6.02	2.669	6.468
	15.58	38.2	175.40	249.50	65.01	154.50	0.938	-0.077	4.95	5.94	14.210	-7.027
	15.59	38.3	79.08	-189.00	26.55	-128.10	1.078	-0.038	17.23	-19.21	14.230	19.260
	15.60	38.4	72.53	-176.90	28.33	-119.80	0.970	-0.054	13.93	-14.50	15.490	16.430
	15.61	38.5	50.70	-145.30	20.01	-103.50	1.046	-0.062	8.42	-16.88	12.360	10.320
	15.62	38.6	44.60	-129.70	22.33	-94.09	1.143	-0.063	7.18	-16.94	10.450	9.803
	15.63	38.7	43.87	-110.60	22.45	-81.21	0.992	-0.063	4.78	-15.62	8.353	9.175
	15.64	38.8	43.04	-99.76	23.34	-74.22	0.830	-0.051	5.29	-14.83	8.755	10.810
	15.65	38.9	44.70	-85.07	25.12	-62.46	1.078	-0.048	4.76	-13.83	7.254	12.030
	15.66	38.10	49.44	-68.51	29.06	-48.59	1.067	-0.046	5.13	-13.08	6.207	12.190
	15.67	38.11	56.32	-51.42	33.51	-34.56	1.024	-0.060	5.57	-12.52	6.334	11.730
	15.68	38.12	64.04	-32.33	37.68	-19.12	0.917	-0.068	6.29	-12.12	6.175	10.560
	15.69	38.13	83.49	-6.23	49.54	-0.37	1.186	-0.091	6.88	-10.99	7.243	8.763
	15.70	38.14	94.02	19.90	55.84	16.90	1.057	-0.099	7.16	-9.73	9.284	7.009
	15.71	38.15	104.00	48.01	59.54	37.84	1.089	-0.112	7.87	-8.30	9.760	5.402
	15.72	38.16	117.80	78.31	67.08	60.80	1.132	-0.115	9.30	-6.40	11.980	3.670
	15.73	38.17	119.90	108.80	67.20	84.04	1.078	-0.108	8.76	-4.52	11.320	1.957
	15.74	38.18	137.80	141.90	67.46	106.00	0.938	-0.126	9.86	-2.33	12.650	-0.064
	15.75	38.19	148.40	176.20	64.49	125.40	1.035	-0.125	10.65	-0.22	13.620	-2.182
	15.76	38.20	161.30	215.50	61.83	144.50	1.089	-0.125	11.63	2.43	13.430	-4.568
	15.77	38.21	184.20	251.20	67.32	160.90	1.035	-0.131	11.61	4.87	16.370	-6.822
	15.78	38.22	92.89	50.01	49.89	38.05	0.863	-0.109	8.52	-7.92	9.844	4.906
	15.80	39.1	32.40	-152.60	22.91	-110.00	1.078	-0.020	9.33	-20.09	11.600	9.823
	15.81	39.2	84.53	14.66	49.06	15.94	1.014	-0.102	7.89	-10.31	7.983	7.559
	15.82	39.3	48.62	-164.20	17.08	-113.00	1.229	-0.083	11.75	-19.25	13.450	11.740
	15.83	39.4	49.10	-104.00	26.57	-76.18	1.046	-0.061	5.97	-15.11	7.708	9.819
	15.84	39.5	51.91	-75.10	29.71	-54.12	0.917	-0.053	3.96	-13.51	7.148	11.730
	15.85	39.6	75.74	-39.10	46.11	-26.15	0.863	-0.079	4.81	-12.33	6.154	10.790
	15.86	39.7	103.40	18.67	63.31	19.08	0.949	-0.119	5.50	-10.09	7.603	7.127
	15.87	39.8	112.00	61.20	67.51	51.28	0.895	-0.132	5.87	-7.97	9.760	4.670
	15.88	39.9	140.20	120.20	70.22	91.90	0.949	-0.133	7.80	-4.24	11.180	1.223

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
	15.89	39.10	181.90	191.70	75.07	130.90	1.132	-0.132	10.27	0.45	15.630	-3.243
	15.91	40.1	210.30	269.70	77.79	168.80	0.981	-0.144	13.06	5.64	17.550	-8.051
	15.92	40.2	87.74	51.54	49.49	40.34	0.970	-0.132	6.36	-8.29	7.328	4.673
	16.1	41.1	176.00	195.90	69.55	130.80	1.003	-0.134	8.26	0.40	13.900	-2.816
	16.2	42.1	177.50	193.50	70.32	129.50	1.035	-0.134	9.24	0.38	15.900	-3.028
	16.3	42.2	54.38	-73.28	30.13	-58.97	1.057	-0.049	0.14	0.01	1.131	0.074
	16.4	42.3	56.62	-77.38	32.08	-56.69	1.014	-0.050	0.14	0.03	0.846	0.047
	16.5	42.4	36.48	-62.77	21.13	-43.34	1.186	-0.024	0.15	0.01	0.994	0.045
	16.6	42.5	33.88	-51.99	22.48	-25.82	1.251	-0.033	0.15	-0.01	0.867	0.028
	16.7	42.6	30.28	-20.31	18.04	-7.96	1.014	-0.042	0.15	0.00	1.121	0.050
	16.8	42.7	38.42	24.57	22.75	16.35	1.046	-0.065	0.15	0.01	1.153	0.039
	16.9	42.8	38.61	66.73	23.15	38.03	1.111	-0.094	0.15	0.01	0.941	0.041
	16.10	42.9	45.02	109.30	30.43	66.98	0.992	-0.092	0.16	-0.01	1.026	0.045
	16.11	42.10	47.79	157.40	31.96	103.00	0.917	-0.092	0.15	-0.01	0.846	0.052
	16.12	42.11	49.29	203.30	32.29	134.40	1.024	-0.078	0.16	-0.01	0.656	0.055
	16.13	42.12	55.74	253.10	35.83	167.50	1.024	-0.077	0.15	0.00	0.825	0.041
	16.14	42.13	56.96	275.90	36.33	182.00	1.014	-0.074	0.16	-0.01	0.888	0.051
	16.15	42.14	30.70	-9.71	13.70	-0.26	1.014	-0.038	0.14	0.00	0.825	0.048
	16.16	42.15	32.90	-14.67	16.96	-3.83	1.024	-0.063	0.14	0.00	0.814	0.052
	16.17	42.16	27.30	10.13	14.03	5.02	1.165	-0.099	0.15	0.03	1.237	0.051
	16.18	42.17	13.17	11.48	13.68	18.03	1.100	-0.069	0.15	0.02	1.047	0.039
	16.19	42.18	22.40	33.40	15.35	34.88	1.165	-0.088	0.16	0.02	1.005	0.061
	16.20	42.19	24.93	62.35	14.61	50.92	1.208	-0.096	0.16	0.00	0.952	0.051
	16.21	42.20	27.57	85.09	16.54	64.93	0.917	-0.091	0.17	-0.03	0.941	0.066
	16.22	42.21	33.37	107.60	18.78	78.22	1.132	-0.091	0.16	0.01	0.899	0.065
	16.23	42.22	34.39	127.10	18.72	89.55	1.154	-0.081	0.16	0.01	0.941	0.055
	16.24	42.23	41.89	143.10	22.77	99.38	1.078	-0.094	0.15	0.00	1.121	0.056
	16.25	42.24	56.72	154.80	31.37	105.80	1.089	-0.092	0.17	0.00	1.015	0.045
	16.26	42.25	50.61	166.10	27.51	110.70	1.035	-0.094	0.16	0.00	1.195	0.049
			67.82	177.30	35.62	115.40	1.035	-0.124	0.16	-0.01	1.100	0.044
49	12.67											
64	12.91		1.51	-7.78	1.29	-6.90	0.571	-0.034	0.14	-2.04	0.676	0.857
82	13.28		1.51	-2.74	1.55	-5.90	0.518	0.093	0.16	-1.84	0.634	1.561
94	13.57		2.02	1.08	1.37	0.47	0.496	0.059	0.13	-2.46	0.422	0.650
94	13.58		1.32	2.56	1.20	0.46	0.550	0.004	0.17	0.75	0.593	-0.126
108	13.71		1.53	2.70	1.34	0.69	0.863	-0.004	0.16	0.83	0.561	-0.141
	13.97		1.13	3.95	1.43	-0.23	0.863	0.146	0.18	5.99	0.572	-1.094
138	14.17		2.17	2.17	1.39	1.26	0.690	0.092	0.18	4.60	0.675	-0.163

Blade Flatwise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Flatwise Mom. Blade Sta 0492 Vibratory in.-lb.	Flatwise Mom. Blade Sta 0492 Mean in.-lb.	Flatwise Mom. Blade Sta 1230 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1230 Mean in.-lb.	Flatwise Mom. Blade Sta 1968 Vibratory in.-lb.	Flatwise Mom. Blade Sta 1968 Mean in.-lb.	Flatwise Mom. Blade Sta 2608 Vibratory in.-lb.	Flatwise Mom. Blade Sta 2608 Mean in.-lb.	Flatwise Mom. Blade Sta 3690 Vibratory in.-lb.	Flatwise Mom. Blade Sta 3690 Mean in.-lb.
	15.79		2.09	2.19	1.36	-0.51	0.841	0.035	0.12	-3.55	0.527	0.777
	15.90		1.32	-2.69	0.73	-2.95	0.841	-0.077	0.15	-0.98	0.666	0.486
	15.93		1.06	-10.25	1.34	-6.20	0.518	-0.012	0.16	-3.55	0.825	1.260
			1.98	-4.24	1.06	-1.97	0.582	-0.091	0.10	-3.67	0.761	0.560

APPENDIX K

Blade Edgewise Loads

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
		24.1										
		24.2					129.70	-75.38	75.86	3.61	19.18	138.10
2	12.2	25.1	287.60	-118.00	189.40	-95.38	151.80	-65.44	91.07	5.75	21.98	138.20
	12.3	25.2	334.10	-98.82	232.20	-81.71	210.10	-54.19	114.60	7.88	32.47	139.30
	12.4		456.70	-79.34	317.60	-64.55	154.50	-63.85	84.27	4.82	20.99	139.60
8	12.5	25.3	347.40	-95.00	237.50	-78.88	154.60	-57.20	92.43	5.98	21.22	140.40
9	12.6	25.4	348.20	-83.87	241.90	-70.55	169.10	-52.01	104.90	7.14	27.11	141.60
10	12.7	25.5	374.60	-76.67	262.30	-62.76	161.70	-69.56	79.89	3.60	24.25	139.80
11	12.8	25.6	371.00	-105.10	247.20	-84.87	168.10	-78.98	70.26	3.28	30.20	140.30
12	12.9	25.7	384.70	-120.50	247.20	-95.18	149.20	-66.03	85.88	5.21	19.88	141.20
18	12.10	25.8	334.90	-98.61	228.80	-82.55	138.10	-63.24	79.33	5.44	18.95	143.10
19	12.11	25.9	297.70	-95.22	207.20	-80.13	124.60	-61.38	81.19	5.25	17.43	144.20
20	12.12	25.10	261.10	-95.08	185.70	-78.78	173.40	-67.89	88.30	5.85	24.72	141.60
21	12.13	25.11	391.80	-99.79	265.90	-82.36	194.90	-68.80	88.85	6.27	27.92	141.80
22	12.14	25.12	439.90	-99.77	295.50	-81.36	147.40	-64.96	88.04	5.79	23.44	143.40
26	12.15	25.13	327.00	-96.17	226.90	-80.61	169.10	-65.53	80.49	5.45	25.24	143.90
27	12.16	25.14	378.40	-95.59	258.70	-79.30	138.70	-65.81	91.02	6.27	22.27	144.10
28	12.17	25.15	301.90	-98.61	209.70	-83.15	100.90	-82.86	105.20	-17.55	18.60	143.50
1	12.18	25.16	206.90	-127.30	144.50	-105.00	112.20	-77.75	111.70	-17.02	17.90	142.80
	12.19	25.17	234.30	-130.70	165.90	-102.80	143.50	-77.29	126.20	-15.78	26.00	145.30
	12.20	25.18	309.60	-134.40	216.30	-101.20	142.20	-75.80	120.90	-15.69	25.18	144.20
	12.21	25.19	306.10	-131.40	211.90	-98.62	178.60	-72.96	154.90	-12.92	36.90	146.10
	12.22	25.20	398.40	-133.10	276.60	-94.91	252.60	-74.91	168.10	-8.94	46.99	145.60
	12.23	25.21	589.40	-147.80	403.20	-100.90	175.60	-77.54	162.60	-13.42	34.63	146.00
3	12.24	25.22	403.10	-144.60	271.60	-101.90	195.30	-76.65	159.80	-12.75	42.09	146.50
4	12.25	25.23	454.60	-148.10	304.00	-101.60	218.90	-77.96	181.70	-11.86	46.29	146.70
5	12.26	25.24	525.20	-157.60	345.90	-105.60	169.70	-78.61	148.80	-13.77	31.42	146.00
6	12.27	25.25	389.50	-141.00	259.70	-102.30	159.80	-80.81	144.40	-13.79	30.43	145.50
7	12.28	25.26	362.20	-141.10	244.80	-105.50	175.80	-78.04	160.60	-12.87	36.55	147.00
13	12.29	25.27	401.40	-145.80	273.70	-102.10	164.10	-78.51	162.10	-13.89	36.32	147.20
14	12.30	25.28	378.00	-149.80	255.90	-103.50	164.70	-80.06	169.40	-15.15	38.59	147.70
15	12.31		377.90	-157.00	249.10	-106.80	199.00	-78.43	166.20	-11.52	38.83	147.60
16	12.32	25.29	453.00	-142.90	310.90	-101.40	214.40	-78.87	168.10	-10.36	43.14	148.00
17	12.33	25.30	473.60	-140.00	326.80	-100.90	177.60	-78.32	161.30	-12.53	34.75	147.80
23	12.34	25.31	405.60	-145.20	275.70	-101.70	187.40	-78.90	156.70	-13.63	39.64	147.70
24	12.35	25.32	415.00	-145.80	283.00	-102.10	178.50	-78.14	162.20	-12.12	39.35	148.50
25	12.36	25.33	409.10	-145.80	275.10	-102.10	173.00	-84.34	79.93	9.59	23.67	152.00
30	12.37	25.34	375.30	-126.20	248.10	-100.70	176.00	-78.04	89.30	10.62	24.49	151.20
	12.38	25.35	379.80	-112.60	255.90	-92.32	180.70	-73.46	96.25	11.33	26.64	150.80
	12.39	25.36	397.10	-102.80	269.80	-84.24	192.80	-67.61	102.00	11.58	28.57	149.70
	12.40	25.37	422.00	-92.02	292.50	-76.31						

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
35	12.42	26.1	140.40	-120.00	90.44	-78.64	27.54	-64.77	77.68	-11.29	19.68	97.07
	12.43	26.2	120.50	-107.60	81.11	-69.66	25.57	-61.60	78.74	1.91	17.59	98.89
	12.44	26.3	119.90	-96.47	79.47	-61.45	26.50	-58.22	80.09	14.32	17.01	98.78
	12.45	26.4	125.60	-86.78	91.00	-52.14	33.07	-53.35	88.13	30.29	19.56	100.10
	12.46	26.5	155.70	-80.18	110.90	-44.57	41.66	-48.63	96.96	44.35	24.96	101.70
		26.6										
36	12.47	26.7	126.80	-114.10	81.41	-81.39	27.19	-63.78	64.02	2.73	17.01	93.71
	12.48	26.8	121.10	-96.82	77.91	-67.69	27.93	-57.60	69.14	15.74	19.50	96.30
	12.49	26.9										
	12.50	26.10	127.60	-81.02	90.79	-54.63	33.73	-51.92	81.75	29.82	23.62	98.84
	12.51	26.11	151.40	-68.02	113.80	-42.14	43.05	-46.13	94.30	44.87	24.26	101.70
	12.52	26.12	176.40	-59.70	135.80	-33.25	51.79	-42.00	104.20	56.43	30.88	103.30
37	12.53	26.13	139.00	-69.01	102.70	-41.16	37.25	-47.52	80.95	38.63	23.80	100.80
38	12.54	26.14	155.30	-62.05	112.90	-34.00	41.85	-43.70	86.17	47.44	25.83	102.40
39	12.55	26.15	182.30	-57.35	135.00	-28.04	49.82	-40.28	98.82	56.58	31.52	104.30
40	12.56	26.16	148.60	-77.76	101.20	-49.12	37.21	-50.57	79.49	29.86	22.35	98.78
41	12.57	26.17	157.60	-87.07	110.10	-56.57	36.36	-52.81	72.46	20.98	23.68	97.07
42	12.58	26.18										
	12.59	26.19										
	12.60	26.20	139.80	-69.46	102.20	-42.72	37.33	-46.95	82.25	37.84	20.95	99.62
43	12.61	26.21	151.90	-68.24	106.90	-41.73	38.57	-46.56	82.80	40.05	23.45	100.00
44	12.62	26.22	153.70	-66.99	107.80	-40.12	38.29	-45.51	87.02	41.99	22.58	100.20
45	12.63	26.23	151.90	-71.28	111.80	-44.25	41.47	-47.24	85.26	36.75	24.84	99.63
47	12.64	26.24	139.00	-69.21	102.80	-42.69	37.44	-46.68	82.55	38.00	22.11	99.58
48	12.65	26.25	150.60	-68.70	105.30	-42.60	37.48	-46.07	76.33	37.11	24.20	99.28
49	12.66	26.26	161.50	-72.59	118.70	-45.66	44.10	-47.49	94.20	37.31	26.53	99.08
51	12.68	27.1	62.28	-126.40	42.04	-88.46	14.43	-56.15	45.34	-0.95	10.62	94.90
	12.69	27.2	59.67	-115.30	38.59	-77.91	12.46	-51.76	47.35	12.26	9.40	97.38
	12.70	27.3	63.63	-105.40	42.00	-67.88	15.13	-46.89	51.52	28.06	12.31	101.10
	12.71	27.4	78.46	-97.06	55.14	-57.87	21.31	-42.12	56.04	43.31	12.77	104.10
	12.72	27.5	100.30	-91.19	73.85	-47.94	27.27	-38.61	65.53	59.85	16.19	106.40
	12.73	27.6	135.10	-85.32	86.47	-36.10	31.33	-34.66	71.10	75.99	19.56	109.50
	12.74	27.7	172.20	-85.32	109.90	-29.06	39.80	-31.24	82.65	93.71	23.68	111.40
	12.75	27.8	194.60	-88.92	128.60	-28.16	47.31	-29.87	91.19	105.00	30.42	112.40
50	12.76	27.9	133.50	-127.90	83.44	-65.70	32.07	-46.65	77.18	46.54	20.78	104.50
	12.77	27.10	145.90	-131.00	91.69	-64.37	33.46	-44.97	89.38	62.48	19.33	105.30
	12.78	27.11	160.00	-134.90	106.50	-63.30	38.68	-43.04	99.37	73.96	22.75	106.30
52	12.79	27.12	145.50	-130.90	91.18	-65.12	33.85	-45.46	82.95	58.71	22.52	106.00
53	12.80	27.13	138.60	-132.80	90.87	-64.28	33.31	-44.85	89.43	66.88	19.62	106.40
54	12.81	27.14	147.00	-136.40	98.70	-64.18	38.60	-43.90	96.21	75.65	20.78	106.80
		27.15										

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
55	12.82	27.16	143.60	-129.30	90.49	-65.39	34.39	-47.17	75.82	50.59	20.66	105.50
57	12.83	27.17	142.00	-130.50	88.37	-64.76	32.76	-46.21	83.31	59.03	17.94	105.80
58	12.84	27.18	124.90	-131.80	80.94	-65.32	29.78	-45.92	80.04	60.09	18.23	106.90
		27.19										
59	12.85	27.20	120.60	-134.20	76.57	-66.54	28.66	-47.04	80.89	60.89	17.18	106.00
60	12.86	27.21	146.20	-129.10	91.78	-64.28	34.08	-46.27	84.16	57.44	20.55	106.20
62	12.87	27.22										
	12.88	27.23	140.50	-130.90	88.28	-65.04	33.11	-46.36	85.16	58.91	19.33	106.70
63	12.89	27.24	133.50	-130.10	84.09	-64.91	31.76	-46.49	79.24	58.47	18.40	106.70
64	12.90	27.25	131.30	-131.30	83.96	-65.06	31.76	-46.40	85.62	58.47	17.47	106.60
66	13.1	28.1	141.00	-131.50	102.20	-97.53	74.60	-91.92	63.27	1.37	12.78	149.70
	13.3	28.2	179.10	-122.70	128.70	-86.38	88.99	-84.27	62.97	2.65	15.89	151.20
	13.4	28.3	304.30	-114.10	212.50	-74.04	138.00	-78.96	78.30	4.47	24.15	153.70
	13.5	28.4	430.50	-106.90	301.30	-62.99	193.60	-69.96	87.50	8.05	30.95	154.30
	13.6	28.5	505.10	-106.80	353.20	-60.63	226.90	-68.03	94.58	9.21	37.22	154.90
65	13.7	28.6	196.10	-144.50	136.20	-96.93	95.82	-93.61	112.00	-18.86	19.28	151.80
	13.8	28.7	230.80	-150.20	158.00	-97.18	107.40	-93.77	116.10	-16.43	23.80	151.80
	13.9	28.8	318.50	-155.30	220.00	-95.37	152.80	-91.51	128.70	-13.38	36.63	152.30
	13.10	28.9	449.40	-162.00	316.70	-94.98	216.20	-89.51	134.90	-9.26	44.72	153.00
	13.11	28.10	583.30	-174.00	402.30	-99.47	266.20	-91.07	139.00	-5.55	52.34	153.30
67	13.12	28.11	404.30	-167.10	282.30	-99.12	190.60	-93.40	142.90	-11.93	37.16	152.60
68	13.13	28.12	451.30	-169.70	313.90	-98.94	212.10	-92.69	133.80	-9.80	41.32	153.00
69	13.14	28.13	507.00	-174.40	351.10	-100.00	230.90	-92.18	129.90	-7.59	41.68	153.50
70	13.15	28.14	372.50	-163.90	255.40	-99.25	171.80	-93.63	146.00	-13.74	36.22	152.90
71	13.16	28.15	317.80	-156.40	219.40	-97.87	151.60	-93.86	137.50	-14.95	34.94	152.90
72	13.17	28.16	385.30	-162.70	268.50	-96.84	184.40	-91.97	143.10	-12.12	38.80	153.10
73	13.18	28.17	354.70	-163.70	244.70	-96.99	171.90	-91.83	137.10	-12.02	37.04	152.90
74	13.19	28.18	340.50	-166.80	232.40	-98.04	163.00	-92.04	137.20	-11.99	36.99	153.90
75	13.20	28.19	417.00	-159.70	292.60	-95.85	196.80	-92.06	148.90	-11.70	41.21	153.80
76	13.21	28.20	434.40	-157.70	308.10	-95.51	205.60	-92.18	152.00	-11.40	38.63	154.20
77	13.22	28.21	394.80	-161.80	274.50	-96.41	187.60	-91.89	144.60	-12.19	38.80	154.00
78	13.23	28.22	389.10	-162.20	273.50	-96.76	184.50	-92.67	136.00	-12.55	39.10	154.00
79	13.24	28.23	400.40	-161.90	277.60	-96.51	190.10	-91.61	144.80	-11.78	38.51	154.10
80	13.25	28.24	448.60	-185.90	311.20	-110.50	206.90	-99.43	101.10	-5.55	37.87	154.40
81	13.26	28.25	512.20	-189.60	355.80	-110.80	241.90	-99.60	105.40	-2.30	43.90	154.90
82	13.27	28.26	279.10	-153.10	191.70	-93.31	123.10	-89.93	57.91	36.69	23.21	153.30
80A	13.29	29.1	65.27	-62.65	32.34	-13.67	9.85	-31.21	17.80	20.49	11.73	87.64
	13.30	29.2	68.81	-56.16	34.68	-10.10	10.66	-29.95	19.11	24.02	11.61	87.74
	13.31	29.3	77.58	-50.04	39.35	-6.38	11.16	-28.33	21.03	28.16	12.37	87.33
	13.32	29.4	83.69	-43.69	43.68	-2.99	12.82	-27.37	22.54	32.93	13.99	87.84
	13.33	29.5	86.98	-37.91	47.27	0.26	14.36	-25.93	22.94	37.40	15.39	87.66

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
		29.6										
81A	13.34	29.7	51.22	-69.93	24.07	-16.13	7.72	-32.39	13.72	20.66	10.45	87.20
	13.35	29.8	56.36	-62.09	28.01	-11.85	8.76	-30.59	15.23	24.42	10.68	87.02
	13.36	29.9	50.93	-53.94	26.54	-7.30	9.50	-28.63	15.03	28.79	11.03	86.86
	13.37	29.10	58.54	-45.80	32.42	-2.89	10.89	-26.68	16.34	33.14	10.86	86.70
	13.38	29.11	62.51	-38.06	33.85	1.23	10.23	-25.15	18.25	38.04	10.57	86.83
	13.39	29.12	63.53	-31.11	35.58	4.96	10.77	-23.56	19.87	42.95	11.03	86.56
	13.40	29.13	65.51	-23.18	35.67	8.81	11.04	-22.23	20.62	48.09	10.22	86.75
	13.41	29.14	67.65	-14.38	37.84	12.70	11.70	-20.50	22.59	54.01	9.41	86.59
	13.42	29.15	77.10	-7.20	41.21	15.85	13.59	-19.36	26.93	60.21	11.21	86.08
81B	13.43	29.16	63.67	-15.44	32.25	4.24	11.35	-14.78	18.56	37.62	11.26	69.89
	13.44	29.17	66.29	0.44	35.58	11.12	11.66	-11.76	19.82	43.40	10.22	68.93
	13.45	29.18	57.13	29.33	32.69	26.84	11.35	-4.17	23.75	57.09	11.21	67.21
	13.46	29.19	69.10	61.07	39.26	44.55	13.74	3.98	26.22	75.76	11.61	65.33
	13.47	29.20	77.44	75.90	42.56	51.00	14.17	7.32	25.72	85.43	11.32	65.30
	13.48	29.21	79.76	83.20	43.16	54.95	14.59	9.85	26.02	92.59	12.37	64.39
87	13.49	29.22	60.48	25.05	37.10	17.48	12.05	-3.59	22.14	47.84	10.45	65.00
88	13.50	29.23	62.56	25.28	31.08	16.58	10.27	-3.64	17.04	47.41	11.15	64.94
89	13.51	29.24	64.98	24.02	32.73	16.09	11.85	-4.16	17.40	47.45	11.44	65.29
90	13.52	29.25	73.36	22.14	43.51	14.59	15.98	-3.56	28.39	47.78	12.54	63.45
91	13.53	29.26	83.44	22.41	48.88	15.23	17.91	-2.83	36.51	48.72	9.81	62.49
92	13.54	29.27	58.05	20.00	35.97	12.60	12.82	-3.12	22.34	46.56	10.51	62.28
93	13.55	29.28	68.13	19.83	40.35	12.16	14.52	-2.89	22.09	46.46	10.51	61.92
94	13.56	29.29	63.77	20.29	38.10	12.67	12.66	-2.19	26.47	46.92	12.25	60.87
		30.1										
95	13.59	30.2	94.78	31.99	56.10	14.49	19.65	5.52	38.63	37.34	17.36	34.65
	13.60	30.3	96.67	54.61	54.16	25.70	19.92	14.27	41.90	49.17	12.95	30.24
	13.61	30.4	91.78	42.05	55.15	14.07	20.19	12.99	40.39	40.92	14.52	27.92
101	13.62	30.5	99.39	25.23	57.40	-0.51	20.46	12.24	40.44	31.95	15.56	24.04
95A	13.63	30.6	95.56	43.34	55.02	10.66	20.42	20.05	42.16	43.14	15.27	20.05
101A	13.64	30.7	100.80	20.25	58.79	-8.08	20.66	16.34	43.11	29.34	16.55	17.87
102	13.65	30.8	105.00	18.81	55.24	-10.21	17.99	17.80	38.12	28.03	15.27	16.16
103	13.66	30.9	110.40	23.55	56.41	-9.32	19.23	20.14	37.21	28.96	18.35	14.63
104	13.67	30.10	121.80	20.30	72.21	-13.25	26.52	20.37	51.64	27.92	18.12	12.92
106	13.68	30.11	98.81	19.27	57.88	-15.25	20.31	21.47	40.54	26.77	16.26	12.26
107	13.69	30.12	110.40	18.43	60.22	-15.75	21.50	22.97	41.90	26.78	17.59	11.23
108	13.70	30.13	110.70	13.16	65.02	-20.87	22.78	22.68	50.93	26.23	15.15	10.43
109	13.72	31.1	67.46	1.60	36.15	15.51	11.57	-13.52	19.99	46.84	11.72	80.57
110	13.73	31.2	71.33	1.14	38.74	13.09	12.27	-12.74	21.95	46.15	11.95	78.61
111	13.74	31.3	74.37	1.04	38.96	12.03	12.35	-12.36	23.71	45.58	12.52	77.17
112	13.75	31.4	80.85	2.82	41.81	12.48	13.23	-11.03	22.30	45.86	13.16	75.30

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
113	13.76	31.5	80.07	9.01	45.15	14.84	14.81	-8.95	27.08	46.68	12.81	74.15
114	13.77	31.6	105.80	70.80	55.74	33.67	17.50	14.75	40.88	54.45	15.12	34.94
115	13.78	31.7	109.80	69.35	54.53	29.40	17.42	16.80	42.69	54.09	14.66	31.84
116	13.79	31.8	113.90	68.80	57.99	27.40	19.46	18.42	45.01	53.10	14.77	29.86
117	13.80	31.9	107.10	61.43	63.70	22.37	22.50	19.65	45.56	50.50	13.45	27.32
118	13.81	31.10	128.40	60.43	71.65	20.12	26.42	22.21	56.84	50.66	15.35	24.36
128	13.82	31.11	105.30	57.41	53.79	16.87	17.69	23.57	42.04	48.63	16.91	22.41
129	13.83	31.12	114.20	56.43	57.43	14.00	18.08	24.89	40.68	48.20	14.89	20.31
130	13.84	31.13	115.40	55.76	61.32	12.28	20.77	26.22	41.99	47.78	14.95	19.25
123	13.85		105.00	51.84	55.83	8.78	16.69	31.72	39.37	48.77	15.93	13.90
122	13.86	31.14	102.10	45.39	52.06	2.27	15.69	35.10	37.20	48.61	15.41	17.50
124	13.87	31.15	87.71	36.87	47.57	-2.80	16.42	34.86	38.91	47.98	13.62	22.70
122A	13.88	31.16	100.90	9.79	58.33	-23.52	20.00	26.00	42.09	26.12	15.58	17.48
122B	13.89		89.74	40.82	46.79	1.42	14.77	38.78	40.42	47.46	14.08	14.88
124A	13.90	31.17	92.69	56.82	46.92	15.49	13.00	46.71	36.95	64.50	16.16	17.56
125	13.91	31.18	56.10	0.47	33.56	-21.96	11.46	28.15	25.37	37.26	10.68	34.03
126	13.92		57.80	-0.55	32.95	-20.47	11.77	26.48	22.45	38.32	12.70	35.96
127	13.93	31.19	57.31	-1.51	30.31	-19.35	11.85	25.83	22.05	38.69	11.08	36.65
119	13.94	31.20	51.03	-6.56	30.18	-18.71	9.96	21.66	21.95	37.73	10.68	42.62
120	13.95	31.21	66.21	-33.34	34.55	-33.68	12.46	11.94	23.26	21.43	13.45	43.86
121	13.96	31.22	60.07	19.03	33.12	1.77	10.69	25.24	24.37	59.02	11.60	50.32
131	14.1	32.1	58.54	-40.57	32.00	-5.25	10.48	-22.35	17.74	39.03	12.13	87.46
132	14.2		58.88	-38.17	32.00	-4.41	9.52	-22.79	17.84	39.63	10.18	88.23
133	14.3	32.2	72.54	-34.74	37.87	-2.93	10.90	-22.56	16.93	40.79	10.58	88.90
133A	14.4	32.3	92.30	-31.63	47.24	-0.69	14.70	-21.67	19.60	42.11	13.57	88.39
134	14.5	32.4	58.97	-38.07	32.56	-4.08	9.44	-23.19	19.35	39.12	10.87	89.28
135	14.6	32.5	56.85	-39.31	32.39	-4.07	10.59	-22.96	20.85	38.54	9.66	89.14
139	14.7	32.6	59.21	-34.55	32.56	-2.09	10.06	-22.31	18.59	39.89	10.12	89.29
140	14.8	32.7	66.99	-32.44	35.63	-0.59	11.78	-22.75	15.33	41.83	11.15	90.58
141	14.9	32.8	80.18	-28.76	41.59	1.85	13.74	-21.80	17.74	43.24	10.41	90.09
142	14.10	32.9	61.92	-36.69	34.03	-2.16	11.36	-23.42	21.06	39.83	10.01	90.50
143	14.11	32.10	61.63	-38.33	33.86	-2.84	11.06	-23.84	22.16	39.29	10.64	90.75
136	14.12	32.11	59.79	-34.39	32.91	-1.41	9.67	-23.17	18.64	40.36	10.81	90.50
137	14.13	32.12	57.19	-49.69	28.63	-9.32	9.17	-27.57	16.68	29.35	10.81	91.04
138	14.14	32.13	60.66	-21.70	33.60	5.88	11.09	-20.51	20.60	53.13	10.93	91.90
		33.1										
		33.2										
		33.3										
	15.1	34.1										
	15.2	34.2										
	15.3	34.3	176.70	-145.30	122.40	-106.40	84.90	-99.25	74.41	21.12	17.86	116.90

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
	15.4	34.4	114.20	-141.90	78.49	-108.40	52.66	-99.55	44.86	-10.10	12.54	126.90
	15.5	34.5	116.00	-140.00	81.30	-105.60	55.75	-100.60	38.23	-0.82	12.37	127.30
	15.6	34.6	121.70	-137.80	84.49	-104.70	55.67	-101.90	24.39	9.34	13.23	127.10
	15.7	34.7	133.20	-135.50	93.34	-102.40	61.66	-101.20	23.73	14.32	14.68	126.70
	15.8	34.8	129.20	-132.90	90.06	-99.69	59.42	-99.26	20.87	16.89	14.04	127.10
	15.9	34.9	138.40	-128.00	96.01	-94.81	62.16	-95.57	19.57	15.63	16.18	127.90
	15.10	34.10	171.50	-122.70	118.80	-89.14	76.18	-92.12	22.83	14.77	16.41	129.70
	15.11	34.11	190.20	-119.70	131.50	-84.60	83.86	-87.95	28.65	15.29	16.58	130.10
	15.12	34.12	234.30	-115.50	164.60	-79.38	104.70	-83.62	32.36	17.04	22.31	131.80
	15.13	34.13	265.60	-111.20	187.50	-74.59	119.20	-80.73	37.88	19.52	22.07	133.00
	15.14	34.14	277.20	-108.30	196.60	-68.31	125.40	-74.12	44.26	21.89	19.70	132.90
	15.15	34.15	276.50	-105.70	193.40	-64.28	124.60	-70.72	46.06	25.13	22.13	134.80
	15.16	34.16	301.70	-103.00	209.20	-60.65	135.20	-67.28	54.99	27.70	23.87	135.40
	15.17	34.17	328.50	-101.80	226.60	-58.01	146.70	-63.97	61.06	30.96	25.19	136.50
	15.18	34.18	360.70	-101.40	248.30	-55.58	161.60	-61.00	66.88	33.31	26.58	137.20
	15.19	34.19	397.80	-103.40	275.40	-54.24	180.60	-58.16	71.00	36.42	29.76	138.60
	15.20	34.20	119.40	-145.80	81.43	-97.99	55.60	-89.90	42.05	-15.50	13.98	127.40
	15.21	34.21	125.90	-145.50	85.18	-97.65	57.53	-89.66	43.50	-21.09	14.62	128.20
	15.23	35.1	113.60	-144.80	78.28	-97.33	53.67	-89.14	51.98	-27.26	12.77	128.50
	15.24	35.2	115.40	-144.20	78.62	-97.06	52.70	-89.22	65.08	-29.81	13.00	129.30
	15.25	35.3	55.65	-143.40	35.53	-90.36	9.74	-49.85	28.49	-7.06	9.48	98.94
	15.26	35.4	43.28	-142.60	28.13	-89.96	8.86	-50.08	34.51	2.03	8.04	98.51
	15.27	35.5	41.15	-140.80	28.00	-87.67	9.21	-49.21	21.75	10.87	9.07	101.90
	15.28	35.6	47.44	-138.00	31.57	-85.55	10.09	-48.86	17.43	20.29	10.51	102.90
	15.29	35.7	45.36	-135.20	31.05	-83.24	10.13	-48.62	12.51	27.14	11.31	103.50
	15.30	35.8	43.47	-131.60	30.41	-80.44	9.71	-47.85	10.90	32.38	10.05	103.90
	15.31	35.9	44.73	-127.60	30.41	-77.25	9.63	-46.99	11.15	35.88	9.71	105.00
	15.32	35.10	41.29	-125.30	28.73	-75.12	9.48	-46.22	11.66	38.53	9.65	104.60
	15.33	35.11	42.02	-121.90	28.99	-72.32	9.78	-45.26	15.17	43.07	10.16	105.80
	15.34	35.12	45.45	-118.60	30.88	-68.47	9.90	-44.73	17.43	49.13	11.26	106.60
	15.35	35.13	46.81	-116.20	32.69	-64.77	10.24	-44.39	19.74	56.29	11.02	106.10
	15.36	35.14	45.55	-112.80	32.65	-60.02	10.98	-42.83	19.84	63.72	10.62	106.50
	15.37	35.15	47.24	-109.60	34.24	-55.36	10.13	-41.65	21.75	71.68	10.28	106.00
	15.38	35.16	52.61	-107.10	36.86	-52.67	11.36	-41.95	20.80	79.85	9.71	105.30
	15.39	35.17	53.09	-104.70	36.26	-50.89	11.59	-40.41	20.65	86.57	9.48	103.90
	15.40	35.18	53.96	-102.40	37.85	-49.08	11.86	-40.88	20.75	94.12	10.74	102.00
	15.41	35.19	55.51	-101.80	39.61	-48.30	12.36	-40.57	21.15	97.92	13.55	102.50
	15.42	35.20	54.54	-101.10	37.72	-47.51	12.06	-39.50	21.40	104.10	11.83	106.00
	15.43	35.21	55.80	-100.70	39.53	-47.17	12.25	-38.94	20.05	106.90	10.74	103.70
	15.44	35.22	57.40	-100.20	40.65	-46.79	12.63	-38.88	24.01	110.00	11.14	102.40
	15.45	35.23	57.11	-99.96	41.25	-46.83	13.33	-38.73	25.17	114.80	11.43	102.60

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
	15.46	35.24	55.70	-100.50	36.26	-47.40	11.86	-38.51	22.41	119.50	12.52	102.00
	15.47	35.25	58.46	-100.60	39.70	-47.71	12.17	-38.31	25.32	123.60	12.12	102.20
	15.48	35.26	57.15	-100.30	39.44	-47.75	12.83	-38.13	24.37	127.00	12.58	101.00
	15.49	35.27	59.43	-100.90	40.26	-48.48	13.33	-38.01	23.86	131.60	12.92	101.20
		35.28										
	15.50	35.29	57.15	-102.40	40.78	-49.52	13.06	-37.76	26.13	140.40	12.46	101.00
	15.51	35.30	60.06	-103.60	40.04	-51.54	13.33	-37.15	26.88	150.00	13.55	102.70
	15.54	36.1	70.60	-105.50	50.32	-52.54	16.10	-37.07	31.75	157.30	15.56	100.20
		36.2										
	15.55	37.1	74.03	-107.60	51.79	-54.30	17.41	-36.98	34.67	166.30	17.23	100.00
	15.57	38.1	55.28	-111.70	37.14	-67.84	12.42	-30.07	15.90	95.10	11.05	77.54
	15.58	38.2	330.00	-101.60	225.10	-53.76	149.60	-70.77	60.77	40.81	24.75	140.30
	15.59	38.3	195.10	-138.60	131.80	-90.54	88.51	-101.70	77.37	22.18	19.49	128.00
	15.60	38.4	175.50	-148.20	119.20	-105.70	86.00	-100.40	80.59	20.20	17.64	117.70
	15.61	38.5	138.90	-143.50	95.44	-102.80	68.86	-97.63	72.29	-19.03	15.32	120.70
	15.62	38.6	126.50	-143.50	87.76	-102.50	62.40	-98.79	69.67	-15.93	15.49	127.90
	15.63	38.7	127.30	-144.80	85.56	-102.10	57.97	-100.80	48.59	-7.23	14.05	133.10
	15.64	38.8	130.50	-142.40	87.93	-101.90	59.85	-106.30	47.84	5.26	15.03	134.70
	15.65	38.9	128.30	-141.90	89.10	-102.40	59.08	-106.50	39.89	16.50	14.80	134.30
	15.66	38.10	138.60	-140.30	98.42	-100.50	68.29	-106.00	31.94	20.98	16.77	133.20
	15.67	38.11	153.00	-137.10	109.40	-97.58	75.68	-104.00	32.24	22.96	14.80	134.30
	15.68	38.12	170.70	-133.60	123.10	-93.08	84.12	-102.00	33.75	21.42	17.23	136.20
	15.69	38.13	205.50	-130.00	147.00	-88.16	103.50	-98.71	43.21	19.48	20.64	136.30
	15.70	38.14	227.10	-124.90	160.10	-81.77	107.10	-93.33	45.47	18.44	22.90	135.50
	15.71	38.15	243.50	-121.00	172.00	-76.20	113.90	-88.94	47.29	20.06	23.76	137.00
	15.72	38.16	257.20	-117.20	182.50	-70.32	122.70	-83.57	52.32	22.75	24.86	137.30
	15.73	38.17	266.60	-113.80	187.90	-65.14	125.00	-79.36	50.96	25.85	24.80	137.90
	15.74	38.18	285.30	-110.50	201.00	-60.41	132.50	-75.15	58.45	29.20	24.34	138.60
	15.75	38.19	301.00	-107.60	210.50	-56.56	138.80	-71.49	57.40	31.47	26.83	140.10
	15.76	38.20	315.80	-106.00	217.50	-54.04	143.50	-68.02	62.08	34.79	27.12	141.20
	15.77	38.21	342.30	-104.60	232.60	-51.82	153.60	-64.57	69.97	37.40	29.49	142.10
	15.78	38.22	231.40	-118.20	161.90	-66.63	108.40	-76.33	49.35	19.12	23.42	134.80
	15.80	39.1	127.30	-135.30	89.01	-88.22	62.28	-91.68	67.41	-26.59	14.40	132.20
	15.81	39.2	206.00	-126.30	146.90	-82.36	103.50	-95.61	45.53	19.27	22.14	139.70
	15.82	39.3	135.80	-134.30	94.53	-92.07	66.48	-100.30	84.41	-13.70	15.78	126.90
	15.83	39.4	128.20	-138.50	89.05	-100.10	62.55	-105.50	50.20	3.40	15.44	135.60
	15.84	39.5	145.60	-136.40	101.40	-95.72	68.94	-104.60	35.56	19.92	16.19	134.60
	15.85	39.6	187.00	-130.40	132.70	-90.13	89.47	-101.00	31.39	23.24	19.60	133.10
	15.86	39.7	241.80	-121.80	176.00	-80.77	120.40	-94.35	36.17	20.78	22.49	136.40
	15.87	39.8	260.90	-114.70	187.20	-71.24	127.30	-87.95	44.42	23.71	23.01	139.50
	15.88	39.9	289.30	-107.40	204.60	-61.72	136.50	-80.14	46.08	28.88	25.21	140.00

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
	15.89	39.10	333.50	-101.90	232.30	-53.42	156.30	-71.35	57.10	35.06	27.58	142.10
	15.91	40.1	372.20	-99.27	256.90	-48.61	172.40	-63.92	69.17	40.77	32.44	144.20
	15.92	40.2	222.60	-111.60	157.40	-62.31	104.40	-77.19	40.14	20.62	22.55	136.10
	16.1	41.1	345.30	-106.60	242.50	-62.01	163.30	-80.75	52.57	37.98	27.75	145.70
	16.2	42.1	326.30	-103.30	228.10	-57.83	154.60	-76.84	54.18	37.23	25.67	146.10
	16.3	42.2	152.60	-137.70	107.90	-94.09	73.18	-99.45	0.70	-0.10	5.49	0.11
	16.4	42.3	143.60	-130.30	105.50	-73.27	74.66	-103.90	0.81	-0.05	5.49	0.09
	16.5	42.4	91.16	-111.20	62.65	-48.56	33.71	-96.06	0.81	-0.17	5.26	0.08
	16.6	42.5	79.36	-123.80	53.09	-38.65	18.43	-59.99	0.76	-0.22	5.55	0.06
	16.7	42.6	58.66	-101.00	38.83	-1.45	9.74	-41.06	0.81	-0.16	5.90	0.07
	16.8	42.7	64.66	-97.69	43.57	-9.78	12.20	-40.27	0.81	-0.13	6.13	0.05
	16.9	42.8	66.79	-90.70	46.67	-24.83	13.74	-43.54	0.86	-0.15	6.59	0.07
	16.10	42.9	76.80	-86.76	51.41	-33.57	15.28	-43.89	0.86	-0.29	5.44	0.12
	16.11	42.10	85.02	-83.99	57.74	-31.58	16.97	-43.41	0.86	-0.33	5.38	0.06
	16.12	42.11	87.34	-82.22	60.50	-34.13	18.20	-44.38	0.86	-0.32	6.01	0.06
	16.13	42.12	94.30	-84.01	67.09	-39.30	21.55	-44.13	0.81	-0.31	5.61	0.04
	16.14	42.13	102.10	-85.31	68.86	-40.76	21.70	-44.58	0.86	-0.30	5.67	0.07
	16.15	42.14	49.96	-103.80	27.49	-16.36	7.50	-48.28	0.86	-0.18	6.88	0.05
	16.16	42.15	47.35	-87.07	19.78	-19.19	8.43	-50.06	0.81	-0.14	5.61	0.09
	16.17	42.16	40.14	-77.47	15.60	-12.46	5.89	-46.45	0.76	-0.04	4.80	0.07
	16.18	42.17	38.45	-38.30	19.61	-3.61	5.81	-42.27	0.81	-0.09	6.13	0.06
	16.19	42.18	39.08	-44.64	18.36	-2.85	6.12	-41.68	0.86	-0.04	5.49	0.07
	16.20	42.19	42.75	-51.94	19.82	-1.48	7.04	-40.71	0.86	-0.10	6.24	0.05
	16.21	42.20	43.28	-50.73	19.35	-0.15	6.20	-40.08	0.81	-0.27	5.78	0.11
	16.22	42.21	45.22	-50.28	19.65	0.68	6.23	-39.19	0.86	-0.15	6.48	0.10
	16.23	42.22	48.31	-50.09	20.77	1.00	6.77	-38.85	0.86	-0.12	6.07	0.07
	16.24	42.23	54.60	-49.75	22.92	1.92	8.27	-37.99	0.81	-0.20	5.61	0.10
	16.25	42.24	80.81	-42.14	35.81	6.97	11.66	-36.15	0.91	-0.18	6.30	0.05
	16.26	42.25	85.65	-22.59	40.81	18.90	12.35	-32.44	0.86	-0.22	6.13	0.07
			96.77	-2.98	45.51	32.08	15.09	-28.54	0.96	-0.18	5.26	0.04
49	12.67											
64	12.91		2.37	7.85	3.07	2.07	1.93	-10.55	0.60	8.87	3.95	6.14
82	13.28		4.25	4.14	2.07	2.11	2.13	-4.61	0.75	6.71	4.06	10.95
94	13.57		3.38	3.72	3.03	9.49	2.70	-5.17	0.76	7.08	3.75	19.17
94	13.58		3.68	3.16	3.03	1.91	2.36	-2.84	0.86	0.00	5.57	1.92
108	13.71		4.56	2.89	2.25	1.57	1.82	-2.49	0.76	0.36	4.65	2.45
	13.97		4.70	-21.26	1.86	-32.44	2.43	16.22	0.81	-10.88	5.52	-25.77
138	14.17		3.77	-15.79	3.63	-15.69	1.35	16.28	0.65	-4.63	3.35	-10.68

Blade Edgewise Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Edgewise Mom. Blade Sta 0492 Vibratory in.-lb.	Edgewise Mom. Blade Sta 0492 Mean in.-lb.	Edgewise Mom. Blade Sta 1230 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1230 Mean in.-lb.	Edgewise Mom. Blade Sta 1968 Vibratory in.-lb.	Edgewise Mom. Blade Sta 1968 Mean in.-lb.	Edgewise Mom. Blade Sta 2608 Vibratory in.-lb.	Edgewise Mom. Blade Sta 2608 Mean in.-lb.	Edgewise Mom. Blade Sta 3690 Vibratory in.-lb.	Edgewise Mom. Blade Sta 3690 Mean in.-lb.
	15.79		2.56	15.35	2.25	19.42	1.23	-7.46	0.60	7.60	3.22	20.99
	15.90		4.17	5.01	2.29	6.23	2.62	-3.76	0.65	0.35	3.35	3.98
	15.93		4.17	-13.22	2.85	-1.05	2.35	-19.17	0.81	5.34	4.45	23.05
			3.78	13.02	3.19	18.05	1.66	-7.75	0.65	7.37	4.28	22.49

APPENDIX L

Blade Torsional Loads

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
		24.1								
		24.2								
2	12.2	25.1	6.590	-6.848	3.693	-12.470	3.494	-7.988	9.734	-13.860
	12.3	25.2	5.929	-9.427	6.877	-13.240	5.591	-10.750	10.000	-13.340
	12.4		3.202	-6.059	5.776	-9.400	6.794	-8.625	10.440	-12.660
8	12.5	25.3	5.362	-5.102	4.855	-9.238	5.707	-6.289	10.050	-13.370
9	12.6	25.4	4.691	-6.865	3.891	-9.576	5.600	-7.847	10.020	-13.020
10	12.7	25.5	6.032	-8.223	5.302	-10.060	6.629	-9.212	10.460	-12.530
11	12.8	25.6	4.682	-3.016	4.373	-8.962	5.154	-4.526	9.623	-13.640
12	12.9	25.7	5.771	-1.564	4.769	-9.544	4.416	-3.363	9.086	-14.000
18	12.10	28.8	5.604	-6.218	4.467	-10.560	4.834	-7.361	10.190	-13.420
19	12.11	25.9	4.784	-6.992	3.090	-10.360	3.552	-7.571	10.000	-13.330
20	12.12	25.10	5.548	-7.380	4.330	-9.915	4.038	-7.421	10.020	-13.180
21	12.13	25.11	5.976	-5.632	5.018	-10.910	5.396	-7.442	9.765	-13.380
22	12.14	25.12	6.451	-5.198	5.397	-11.550	5.756	-7.735	9.828	-13.460
26	12.15	25.13	5.594	-6.343	4.373	-10.250	5.096	-7.425	10.050	-13.310
27	12.16	25.14	6.209	-5.921	4.287	-10.650	4.863	-7.661	9.876	-13.310
28	12.17	25.15	4.142	-6.581	4.003	-9.981	5.387	-7.283	9.971	-13.340
1	12.18	25.16	5.901	2.889	4.967	-0.243	3.125	3.710	11.800	-13.170
	12.19	25.17	3.370	-3.341	3.417	-5.232	2.494	-3.039	12.090	-12.800
	12.20	25.18	3.714	-6.198	4.330	-7.194	4.086	-5.906	12.260	-12.370
	12.21	25.19	3.891	-5.244	3.581	-6.217	4.164	-4.828	12.200	-12.230
	12.22	25.20	6.395	-5.703	5.733	-5.926	6.270	-5.831	12.750	-11.530
	12.23	25.21	11.510	-4.978	8.995	-4.692	8.978	-6.769	13.680	-10.770
3	12.24	25.22	6.776	-4.652	6.240	-5.245	6.357	-4.902	12.940	-11.790
4	12.25	25.23	7.726	-5.445	6.722	-5.581	7.221	-5.643	13.270	-11.370
5	12.26	25.24	11.080	-6.254	8.065	-5.494	8.192	-6.231	14.110	-10.810
6	12.27	25.25	5.706	-4.028	5.939	-5.342	5.775	-4.323	13.040	-12.190
7	12.28	25.26	4.831	-3.165	5.113	-4.951	5.940	-3.345	12.640	-12.540
13	12.29	25.27	6.376	-5.070	6.292	-5.584	6.571	-5.342	12.690	-11.700
14	12.30	25.28	6.367	-5.564	6.025	-5.626	6.027	-5.128	12.930	-11.590
15	12.31		6.711	-6.153	6.034	-5.717	6.154	-5.082	13.650	-11.450
16	12.32	25.29	5.734	-4.423	7.067	-5.538	7.192	-5.746	12.990	-11.840
17	12.33	25.30	5.752	-3.944	7.239	-5.643	7.182	-5.955	12.990	-11.990

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
23	12.34	25.31	6.544	-5.033	6.370	-5.599	6.600	-5.399	12.850	-11.690
24	12.35	25.32	5.529	-5.100	7.136	-5.680	7.648	-5.435	13.130	-11.730
25	12.36	25.33	7.326	-4.905	6.327	-5.526	6.357	-5.398	12.970	-11.760
30	12.37	25.34	12.910	-11.130	9.244	-18.720	7.260	-13.230	11.850	-14.390
	12.38	25.35	12.490	-12.100	10.360	-18.520	8.260	-14.100	11.880	-14.150
	12.39	25.36	11.650	-12.490	10.630	-18.530	8.619	-15.010	11.710	-14.010
	12.40	25.37	9.262	-10.860	9.262	-16.360	7.716	-13.570	11.880	-13.650
35	12.42	26.1	3.581	-0.735	5.931	-2.913	2.565	-4.250	6.248	-8.438
	12.43	26.2	4.264	-4.746	5.801	-6.834	2.895	-5.320	6.643	-7.617
	12.44	26.3	5.049	-7.639	5.740	-9.437	2.982	-6.144	6.343	-7.250
	12.45	26.4	6.228	-9.958	5.896	-11.340	3.128	-6.801	6.200	-6.682
	12.46	26.5	7.873	-11.670	7.498	-12.600	3.361	-7.165	6.295	-6.075
		26.6								
36	12.47	26.7	6.022	-8.313	5.368	-11.950	3.089	-5.881	5.710	-7.303
	12.48	26.8	6.499	-10.850	6.468	-13.970	3.167	-6.661	5.599	-6.863
	12.49	26.9								
	12.50	26.10	7.537	-12.710	7.437	-15.310	3.157	-7.178	5.520	-6.519
	12.51	26.11	8.706	-14.120	8.667	-16.160	3.245	-7.599	5.330	-5.988
	12.52	26.12	9.117	-14.650	9.351	-16.090	3.322	-7.771	5.235	-5.530
37	12.53	26.13	6.686	-9.346	8.381	-10.590	2.487	-6.853	5.979	-6.442
38	12.54	26.14	7.050	-10.580	7.784	-11.530	2.856	-7.162	5.742	-6.064
39	12.55	26.15	8.257	-11.690	7.307	-12.300	3.245	-7.394	5.868	-5.628
40	12.56	26.16	6.994	-7.981	8.693	-9.518	2.312	-6.443	6.232	-6.817
41	12.57	26.17	5.994	-6.480	8.121	-8.297	2.176	-6.010	6.169	-7.047
42	12.58	26.18								
	12.59	26.19								
	12.60	26.20	6.695	-9.317	8.121	-10.540	2.545	-6.746	6.121	-6.439
43	12.61	26.21	6.910	-9.702	7.974	-10.720	2.642	-6.783	5.694	-6.331
44	12.62	26.22	7.668	-9.856	7.931	-10.690	2.778	-6.792	5.726	-6.170
45	12.63	26.23	6.508	-9.158	8.208	-10.570	2.341	-6.702	6.279	-6.500
47	12.64	26.24	6.658	-9.427	8.035	-10.700	2.642	-6.748	6.153	-6.396
48	12.65	26.25	6.041	-9.379	7.628	-10.690	2.798	-6.665	6.105	-6.193
49	12.66	26.26	7.097	-9.240	8.442	-10.450	2.361	-6.630	6.074	-6.406
51	12.68	27.1	3.993	-8.135	4.459	-11.400	1.710	-5.066	3.401	-6.914

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	12.69	27.2	4.161	-9.810	4.684	-12.390	1.787	-5.587	3.606	-6.479
	12.70	27.3	4.498	-11.350	4.597	-13.170	1.749	-6.156	3.796	-6.420
	12.71	27.4	4.591	-12.420	4.978	-13.530	1.817	-6.507	4.207	-5.959
	12.72	27.5	5.031	-13.390	5.584	-13.540	1.962	-6.674	4.318	-5.322
	12.73	27.6	7.237	-9.998	7.983	-8.066	1.933	-6.512	4.508	-4.853
	12.74	27.7	9.052	-9.636	9.420	-6.379	1.855	-6.444	4.840	-4.226
	12.75	27.8	9.510	-10.200	9.576	-6.363	1.953	-6.499	5.140	-3.782
50	12.76	27.9	7.780	-7.001	9.515	-5.189	2.098	-5.420	4.793	-5.229
	12.77	27.10	7.088	-9.535	8.234	-7.091	2.157	-5.940	4.745	-4.912
	12.78	27.11	6.284	-11.170	6.978	-8.230	2.089	-6.198	4.824	-4.527
52	12.79	27.12	7.228	-8.895	8.519	-6.670	2.089	-5.853	4.634	-5.164
53	12.80	27.13	6.200	-10.320	6.996	-7.693	2.273	-6.086	4.872	-4.854
54	12.81	27.14	6.994	-11.730	6.364	-8.612	2.419	-6.325	4.793	-4.535
		27.15								
55	12.82	27.16	7.808	-7.523	9.299	-5.688	2.166	-5.697	4.951	-5.460
57	12.83	27.17	7.378	-8.925	8.606	-6.672	2.098	-5.896	4.650	-5.177
58	12.84	27.18	6.676	-9.458	7.524	-7.058	2.302	-6.047	4.729	-5.027
		27.19								
59	12.85	27.20	6.396	-9.724	7.697	-7.196	2.526	-6.111	5.235	-5.057
60	12.86	27.21	7.817	-8.503	9.151	-6.430	1.991	-5.917	4.856	-5.293
62	12.87	27.22								
	12.88	27.23	7.714	-8.947	8.848	-6.687	2.079	-5.963	4.713	-5.261
63	12.89	27.24	7.434	-8.916	8.554	-6.662	2.409	-5.993	4.713	-5.213
64	12.90	27.25	7.920	-8.976	8.779	-6.747	1.962	-5.962	4.793	-5.201
66	13.1	28.1	3.847	-6.460	3.262	-10.440	1.872	-8.351	5.964	-14.150
	13.3	28.2	2.670	-6.875	3.047	-8.986	2.929	-7.895	6.027	-13.490
	13.4	28.3	4.080	-6.706	5.075	-7.580	5.267	-7.593	6.391	-12.790
	13.5	28.4	5.499	-5.795	5.817	-5.763	6.713	-7.206	6.281	-11.900
	13.6	28.5	6.760	-4.926	6.784	-4.622	7.518	-6.955	6.502	-11.690
65	13.7	28.6	5.779	1.939	6.594	0.596	6.111	2.018	7.752	-13.540
	13.8	28.7	5.144	-3.469	6.344	-4.054	6.373	-3.688	7.594	-12.960
	13.9	28.8	5.256	-4.745	7.448	-4.128	7.993	-4.355	7.673	-12.140
	13.10	28.9	6.106	-5.089	7.535	-3.286	9.797	-4.520	7.831	-11.250
	13.11	28.10	8.935	-5.542	7.889	-2.736	11.140	-5.226	7.451	-10.490

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
67	13.12	28.11	7.189	-3.656	8.726	-2.579	9.720	-3.338	8.116	-11.990
68	13.13	28.12	7.226	-4.766	8.872	-2.922	10.130	-4.294	7.736	-11.520
69	13.14	28.13	7.264	-5.518	8.389	-2.923	10.710	-4.691	7.799	-10.870
70	13.15	28.14	7.376	-3.016	9.278	-2.514	9.157	-2.879	8.116	-12.400
71	13.16	28.15	6.750	-1.862	8.061	-2.144	7.867	-2.093	7.847	-12.860
72	13.17	28.16	6.470	-4.276	8.355	-3.307	9.050	-4.088	7.799	-11.950
73	13.18	28.17	6.265	-4.650	8.372	-3.428	9.031	-3.926	7.483	-11.880
74	13.19	28.18	5.873	-5.262	8.122	-3.740	8.429	-4.061	7.388	-11.880
75	13.20	28.19	7.021	-3.700	8.829	-3.089	9.681	-4.170	7.926	-12.030
76	13.21	28.20	7.152	-3.407	9.244	-3.040	9.943	-4.435	7.894	-12.050
77	13.22	28.21	6.311	-4.288	8.432	-3.375	9.167	-4.320	8.005	-11.910
78	13.23	28.22	6.218	-4.311	8.907	-3.352	10.060	-4.300	7.657	-11.900
79	13.24	28.23	6.769	-4.241	8.381	-3.369	8.750	-4.340	7.863	-11.960
80	13.25	28.24	8.431	-4.624	11.150	-2.502	13.170	-3.478	4.651	-10.940
81	13.26	28.25	7.665	-5.367	10.560	-2.513	13.130	-4.024	5.078	-10.450
82	13.27	28.26	4.790	-6.890	4.436	-6.315	5.064	-6.876	3.417	-10.640
80A	13.29	29.1	7.981	-4.710	2.115	-7.199	1.526	-6.437	1.867	-6.959
	13.30	29.2	6.613	-4.645	2.479	-6.916	1.642	-6.548	1.867	-6.370
	13.31	29.3	5.986	-4.665	2.583	-6.574	1.759	-6.605	1.931	-5.906
	13.32	29.4	5.386	-4.743	2.826	-6.280	1.992	-6.670	2.073	-5.309
	13.33	29.5	4.449	-4.761	2.687	-6.121	2.342	-6.663	2.057	-4.932
		29.6								
81A	13.34	29.7	3.269	-2.642	2.046	-7.945	1.166	-6.842	1.456	-7.224
	13.35	29.8	2.848	-3.012	2.323	-7.602	1.225	-6.889	1.314	-6.629
	13.36	29.9	2.436	-3.441	2.150	-7.204	1.458	-6.970	1.298	-6.003
	13.37	29.10	2.539	-3.910	2.488	-6.734	1.584	-7.032	1.456	-5.324
	13.38	29.11	2.220	-4.268	2.341	-6.436	1.662	-6.961	1.361	-4.827
	13.39	29.12	2.557	-4.522	2.245	-6.289	1.798	-6.918	1.298	-4.562
	13.40	29.13	2.080	-4.837	2.401	-6.213	1.973	-6.928	1.282	-4.441
	13.41	29.14	1.958	-5.468	2.982	-6.199	2.167	-7.001	1.139	-4.233
	13.42	29.15	1.845	-6.001	2.549	-6.106	2.138	-6.974	1.408	-4.174
81B	13.43	29.16	2.379	-4.474	1.968	-9.712	0.972	-8.327	2.279	-7.933
	13.44	29.17	1.780	-5.334	1.855	-8.713	0.875	-8.370	2.200	-6.560
	13.45	29.18	1.873	-6.397	1.673	-7.237	1.234	-8.066	1.329	-4.387

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	13.46	29.19	2.314	-8.339	1.448	-6.591	1.001	-7.786	1.583	-3.870
	13.47	29.20	3.026	-9.820	1.569	-6.110	0.923	-7.547	1.804	-3.690
	13.48	29.21	3.091	-10.410	1.552	-5.780	0.904	-7.426	2.042	-3.382
87	13.49	29.22	3.738	-12.090	1.266	-6.851	0.923	-7.174	1.836	-5.833
88	13.50	29.23	2.857	-11.760	1.240	-6.714	0.758	-7.051	1.757	-5.734
89	13.51	29.24	4.009	-11.910	1.820	-6.844	0.846	-7.001	2.073	-5.860
90	13.52	29.25	4.056	-11.640	1.916	-7.054	1.050	-7.151	2.500	-5.910
91	13.53	29.26	4.356	-10.500	2.115	-7.321	1.040	-7.207	2.912	-5.977
92	13.54	29.27	3.541	-10.670	1.318	-7.027	1.069	-7.186	2.057	-5.693
93	13.55	29.28	2.717	-10.500	1.500	-6.848	0.836	-7.119	1.931	-5.544
94	13.56	29.29	4.075	-10.460	1.560	-7.131	0.914	-7.162	2.295	-5.749
		30.1								
95	13.59	30.2	4.787	-10.550	2.549	-9.333	2.439	-9.313	3.624	-6.669
	13.60	30.3	4.375	-10.810	2.835	-8.510	2.595	-9.212	2.833	-4.580
	13.61	30.4	5.049	-11.660	2.852	-8.377	2.605	-8.915	3.197	-5.315
101	13.62	30.5	5.358	-12.400	3.147	-8.965	2.430	-8.701	3.656	-6.629
95A	13.63	30.6	4.562	-10.490	2.661	-8.372	2.371	-8.926	2.833	-4.339
101A	13.64	30.7	5.433	-12.300	2.653	-9.057	2.381	-8.603	3.608	-6.595
102	13.65	30.8	5.461	-11.970	2.999	-8.959	1.963	-8.602	3.450	-6.496
103	13.66	30.9	7.316	-11.210	2.661	-9.262	1.711	-8.667	3.703	-6.444
104	13.67	30.10	5.761	-11.690	3.329	-9.301	2.410	-8.677	4.953	-6.412
106	13.68	30.11	5.414	-11.530	2.575	-8.905	2.381	-8.648	3.608	-6.006
107	13.69	30.12	4.834	-11.240	3.164	-8.838	2.060	-8.546	3.687	-5.952
108	13.70	30.13	6.604	-11.920	3.060	-9.345	2.313	-8.580	4.305	-6.249
109	13.72	31.1	2.042	-5.176	1.806	-8.991	0.883	-8.532	2.295	-6.976
110	13.73	31.2	2.182	-4.482	1.918	-8.675	1.068	-8.328	2.200	-6.684
111	13.74	31.3	3.291	-4.422	2.160	-8.515	1.485	-8.176	2.643	-6.545
112	13.75	31.4	2.536	-4.751	1.806	-8.694	1.204	-8.098	3.007	-6.496
113	13.76	31.5	4.970	-5.951	2.143	-8.443	1.301	-7.834	2.991	-6.470
114	13.77	31.6	4.401	-10.510	2.886	-8.211	2.524	-9.048	2.959	-4.215
115	13.78	31.7	7.254	-10.760	2.653	-8.037	2.447	-8.933	3.133	-4.233
116	13.79	31.8	7.841	-10.670	2.540	-7.975	2.388	-8.889	3.371	-4.277
117	13.80	31.9	4.308	-10.550	2.350	-8.033	1.942	-8.822	2.928	-4.006
118	13.81	31.10	7.226	-11.080	2.471	-7.788	2.087	-8.683	3.244	-4.265

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
128	13.82	31.11	4.140	-9.898	2.583	-8.222	2.214	-8.922	3.023	-3.571
129	13.83	31.12	6.797	-10.240	2.419	-8.033	2.126	-8.736	2.928	-3.676
130	13.84	31.13	8.270	-10.460	2.203	-7.932	2.107	-8.636	3.466	-3.902
123	13.85		4.401	-9.301	2.990	-8.063	2.369	-8.697	3.038	-3.168
122	13.86	31.14	4.988	-10.850	2.653	-7.467	2.398	-7.840	2.801	-3.126
124	13.87	31.15	5.044	-11.320	2.169	-6.918	1.893	-7.096	2.516	-3.104
122A	13.88	31.16	5.660	-12.160	2.281	-8.296	2.107	-7.708	3.624	-5.378
122B	13.89		3.599	-8.694	2.333	-7.634	1.913	-7.913	2.785	-2.634
124A	13.90	31.17	3.534	-9.151	1.979	-6.574	1.524	-7.361	2.437	-2.009
125	13.91	31.18	4.531	-11.090	1.115	-5.472	0.883	-5.436	1.947	-3.652
126	13.92		5.212	-10.280	1.080	-5.623	0.854	-5.441	1.757	-3.432
127	13.93	31.19	6.676	-9.762	0.994	-5.808	0.786	-5.587	2.026	-3.359
119	13.94	31.20	3.963	-9.984	1.210	-5.372	0.767	-5.231	1.646	-3.746
120	13.95	31.21	4.131	-9.319	2.065	-8.252	0.971	-5.906	2.801	-7.184
121	13.96	31.22	3.403	-9.922	0.985	-5.104	0.680	-5.024	1.282	-2.295
131	14.1	32.1	2.038	-3.775	1.919	-5.974	1.504	-6.240	1.550	-4.046
132	14.2		3.630	-4.072	1.988	-5.773	1.543	-6.113	1.597	-4.107
133	14.3	32.2	5.863	-5.017	1.755	-5.570	1.533	-5.903	1.803	-4.122
133A	14.4	32.3	7.771	-5.583	2.196	-5.498	1.834	-5.855	1.898	-4.192
134	14.5	32.4	3.806	-4.227	1.755	-5.937	1.184	-6.106	2.104	-4.449
135	14.6	32.5	2.904	-3.786	1.910	-6.193	1.009	-6.195	2.135	-4.638
139	14.7	32.6	4.672	-4.643	1.858	-5.704	1.339	-6.076	1.930	-4.257
140	14.8	32.7	5.817	-5.057	1.936	-5.625	1.524	-5.975	1.835	-4.049
141	14.9	32.8	7.296	-5.686	2.109	-5.520	1.796	-5.918	1.882	-4.047
142	14.10	32.9	3.481	-4.281	1.867	-5.976	1.223	-6.224	2.024	-4.406
143	14.11	32.10	2.941	-3.884	2.118	-6.218	1.194	-6.296	2.135	-4.555
136	14.12	32.11	4.616	-4.743	2.040	-5.700	1.378	-6.099	1.914	-4.247
137	14.13	32.12	4.756	-3.541	2.550	-7.243	1.320	-6.470	1.977	-6.377
138	14.14	32.13	4.625	-5.427	1.997	-5.470	1.553	-5.973	1.597	-3.441
		33.1								
		33.2								
		33.3								
	15.1	34.1								
	15.2	34.2								

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	15.3	34.3	6.291	1.512	8.683	-3.467	8.501	0.699	3.178	-10.670
	15.4	34.4	3.885	-6.032	3.920	-8.179	3.935	-6.928	1.660	-10.910
	15.5	34.5	2.992	-8.106	2.914	-10.180	3.031	-9.342	1.107	-11.250
	15.6	34.6	2.472	-9.152	2.484	-10.930	2.293	-10.370	0.727	-11.430
	15.7	34.7	1.989	-10.170	1.840	-11.690	1.768	-11.330	0.680	-11.620
	15.8	34.8	2.137	-11.010	1.582	-12.170	1.477	-11.860	0.822	-11.760
	15.9	34.9	1.859	-11.720	1.487	-12.540	1.370	-12.350	0.886	-11.780
	15.10	34.10	2.221	-11.100	1.891	-11.560	1.593	-11.400	0.870	-11.670
	15.11	34.11	2.240	-11.570	1.934	-11.680	1.477	-11.620	1.059	-11.610
	15.12	34.12	3.076	-11.410	2.304	-11.270	1.516	-11.520	1.059	-11.450
	15.13	34.13	3.996	-11.150	3.052	-10.640	1.817	-11.240	1.202	-11.150
	15.14	34.14	4.628	-10.520	4.221	-9.410	1.827	-10.090	1.360	-10.690
	15.15	34.15	5.901	-11.130	4.926	-9.084	1.836	-10.210	1.486	-10.350
	15.16	34.16	6.691	-11.100	5.511	-8.323	2.157	-9.964	1.803	-9.897
	15.17	34.17	7.704	-11.100	6.577	-7.533	2.915	-9.621	2.103	-9.317
	15.18	34.18	9.135	-10.500	7.617	-6.301	3.284	-8.661	2.277	-8.833
	15.19	34.19	11.060	-9.944	8.562	-4.942	3.624	-7.651	2.372	-8.268
	15.20	34.20	4.554	6.062	4.548	4.710	4.168	8.290	1.392	-11.020
	15.21	34.21	4.972	6.572	4.952	5.167	4.547	8.728	1.344	-11.020
	15.23	35.1	5.548	6.710	5.691	5.168	5.295	8.830	1.502	-11.210
	15.24	35.2	6.115	6.924	6.258	5.143	6.199	8.859	2.135	-11.270
	15.25	35.3	1.504	-4.749	1.313	-5.386	0.427	-4.239	0.633	-7.169
	15.26	35.4	2.026	-5.611	1.495	-5.865	0.456	-4.452	0.712	-7.131
	15.27	35.5	1.681	-6.341	1.391	-6.377	0.369	-4.650	0.617	-7.208
	15.28	35.6	1.821	-6.988	1.400	-6.943	0.369	-4.903	0.617	-7.411
	15.29	35.7	1.578	-7.772	1.158	-7.498	0.349	-5.197	0.585	-7.572
	15.30	35.8	1.391	-8.578	1.028	-8.018	0.291	-5.463	0.538	-7.650
	15.31	35.9	1.419	-9.211	1.296	-8.427	0.340	-5.678	0.506	-7.724
	15.32	35.10	1.522	-9.904	1.141	-8.867	0.311	-5.924	0.664	-7.794
	15.33	35.11	1.634	-10.490	1.253	-9.256	0.349	-6.132	0.680	-7.864
	15.34	35.12	1.541	-11.110	1.478	-9.594	0.437	-6.373	0.744	-7.751
	15.35	35.13	1.625	-11.800	1.607	-9.998	0.398	-6.677	0.712	-7.371
	15.36	35.14	1.504	-12.370	1.564	-10.300	0.417	-6.807	0.807	-7.168
	15.37	35.15	1.830	-12.930	1.659	-10.680	0.417	-6.925	0.791	-6.819

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	15.38	35.16	1.606	-13.500	1.382	-10.950	0.427	-7.166	0.759	-6.207
	15.39	35.17	1.485	-14.000	1.287	-11.240	0.379	-7.197	0.775	-5.993
	15.40	35.18	1.410	-14.190	1.452	-11.210	0.408	-7.408	0.823	-5.329
	15.41	35.19	1.737	-14.310	1.823	-11.230	0.515	-7.411	0.886	-5.178
	15.42	35.20	1.634	-14.560	1.633	-11.280	0.466	-7.397	0.933	-5.092
	15.43	35.21	1.737	-14.770	1.694	-11.400	0.456	-7.379	0.981	-4.909
	15.44	35.22	1.737	-14.930	1.633	-11.450	0.495	-7.381	0.949	-4.735
	15.45	35.23	1.942	-15.180	1.797	-11.590	0.515	-7.430	1.013	-4.487
	15.46	35.24	2.241	-15.510	2.082	-11.740	0.786	-7.470	0.870	-4.363
	15.47	35.25	2.017	-15.730	1.944	-11.830	0.573	-7.486	0.918	-4.209
	15.48	35.26	2.241	-15.870	1.944	-11.900	0.573	-7.461	1.060	-4.087
	15.49	35.27	2.661	-16.110	1.840	-12.020	0.534	-7.513	1.123	-3.937
		35.28								
	15.50	35.29	2.381	-16.620	2.074	-12.280	1.165	-7.509	1.519	-3.616
	15.51	35.30	2.503	-16.900	2.117	-12.310	0.767	-7.447	1.092	-3.583
	15.54	36.1	3.072	-17.220	2.152	-12.450	0.699	-7.403	1.266	-3.090
		36.2								
	15.55	37.1	3.353	-17.540	2.385	-12.560	0.718	-7.358	1.345	-2.708
	15.57	38.1	1.371	-13.410	1.347	-10.730	0.398	-5.966	0.838	-4.534
	15.58	38.2	8.359	-12.950	6.589	-8.380	3.322	-10.510	2.103	-8.867
	15.59	38.3	7.129	3.349	9.341	-2.122	8.803	1.496	3.417	-11.840
	15.60	38.4	7.036	1.412	8.165	-2.898	7.696	0.037	3.417	-10.810
	15.61	38.5	5.567	-0.900	5.915	-3.852	6.151	-1.931	2.231	-11.570
	15.62	38.6	5.641	-3.306	5.907	-5.939	6.170	-4.651	1.819	-11.530
	15.63	38.7	3.969	-6.774	3.966	-9.356	4.256	-8.887	1.123	-11.720
	15.64	38.8	3.346	-8.515	2.979	-10.990	3.226	-11.090	1.392	-11.870
	15.65	38.9	2.574	-10.150	2.018	-12.370	2.332	-12.820	1.297	-12.050
	15.66	38.10	1.441	-11.600	1.460	-13.570	1.458	-14.350	1.155	-12.310
	15.67	38.11	1.422	-12.520	1.374	-14.250	1.487	-15.250	1.202	-12.530
	15.68	38.12	1.766	-13.160	1.709	-14.630	1.885	-15.850	0.949	-12.630
	15.69	38.13	1.942	-12.530	2.018	-13.460	1.905	-14.590	1.392	-12.490
	15.70	38.14	3.048	-11.240	2.636	-11.690	2.429	-12.510	1.440	-12.250
	15.71	38.15	3.792	-10.980	3.177	-10.920	2.488	-11.770	1.914	-12.030
	15.72	38.16	4.275	-10.880	4.027	-10.270	2.905	-11.140	2.073	-11.790

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	15.73	38.17	5.028	-10.740	4.112	-9.511	2.410	-10.590	1.914	-11.350
	15.74	38.18	5.530	-10.690	5.503	-8.517	2.594	-10.130	2.104	-10.930
	15.75	38.19	6.599	-10.680	5.615	-7.844	2.896	-9.672	2.262	-10.460
	15.76	38.20	7.240	-10.850	5.864	-7.400	3.071	-9.272	2.357	-9.948
	15.77	38.21	8.820	-10.760	7.186	-6.731	3.877	-8.833	2.611	-9.369
	15.78	38.22	4.322	-6.760	3.700	-6.329	3.479	-5.837	2.595	-11.810
	15.80	39.1	5.948	8.376	6.053	6.002	6.122	9.604	2.073	-11.840
	15.81	39.2	2.732	-12.790	2.601	-13.320	2.361	-14.530	1.756	-12.480
	15.82	39.3	5.298	-2.339	5.950	-6.492	6.063	-4.422	2.690	-11.950
	15.83	39.4	3.234	-7.104	3.168	-9.550	3.440	-9.464	1.408	-11.420
	15.84	39.5	2.463	-9.609	2.516	-11.610	2.730	-11.960	0.965	-12.260
	15.85	39.6	1.961	-11.190	1.605	-12.660	1.788	-13.430	0.902	-12.510
	15.86	39.7	3.179	-12.190	3.125	-12.710	2.633	-14.020	1.440	-12.480
	15.87	39.8	4.322	-11.940	3.606	-11.710	2.740	-13.080	1.456	-12.120
	15.88	39.9	6.050	-12.010	5.417	-10.560	3.109	-12.510	2.215	-11.440
	15.89	39.10	7.547	-11.440	6.576	-8.563	3.255	-10.970	2.278	-10.440
	15.91	40.1	9.638	-11.390	7.555	-7.682	4.071	-9.732	2.785	-9.314
	15.92	40.2	4.312	-7.147	3.305	-6.678	2.556	-5.935	1.408	-11.930
	16.1	41.1	7.277	-14.950	4.061	-13.820	3.566	-14.990	2.073	-10.850
	16.2	42.1	7.017	-13.830	4.585	-12.330	3.080	-13.590	2.262	-10.610
	16.3	42.2	2.435	-9.342	2.859	-11.100	2.614	-11.030	0.301	0.045
	16.4	42.3	1.721	-13.230	1.470	-15.700	1.391	-16.620	0.301	-0.030
	16.5	42.4	4.424	6.534	4.205	6.677	1.566	-24.520	0.301	0.006
	16.6	42.5	4.751	7.788	4.763	13.280	0.652	-13.390	0.316	0.005
	16.7	42.6	5.518	7.593	5.279	8.042	0.389	-6.924	0.301	-0.007
	16.8	42.7	5.434	-1.648	5.039	-0.634	0.545	-10.330	0.316	-0.033
	16.9	42.8	4.396	-6.801	4.703	-5.455	0.701	-11.970	0.301	-0.004
	16.10	42.9	2.273	-10.920	1.900	-9.312	0.584	-12.440	0.301	0.006
	16.11	42.10	2.843	-11.930	2.631	-9.817	0.798	-12.530	0.316	0.013
	16.12	42.11	3.498	-13.230	3.113	-10.730	0.817	-12.610	0.316	0.028
	16.13	42.12	4.171	-15.410	3.431	-12.500	1.070	-12.660	0.332	0.011
	16.14	42.13	4.424	-16.150	3.680	-12.940	1.051	-12.580	0.348	0.006
	16.15	42.14	6.435	5.010	2.485	-13.240	0.467	-8.053	0.316	-0.006
	16.16	42.15	2.974	-7.404	0.877	-8.574	0.370	-11.410	0.301	-0.007

Blade Torsional Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Torsional Mom. Blade Sta 0492 Vibratory in.-lb.	Torsional Mom. Blade Sta 0492 Mean in.-lb.	Torsional Mom. Blade Sta 1230 Vibratory in.-lb.	Torsional Mom. Blade Sta 1230 Mean in.-lb.	Torsional Mom. Blade Sta 1968 Vibratory in.-lb.	Torsional Mom. Blade Sta 1968 Mean in.-lb.	Torsional Mom. Blade Sta 3198 Vibratory in.-lb.	Torsional Mom. Blade Sta 3198 Mean in.-lb.
	16.17	42.16	3.517	-4.529	1.195	-8.054	0.428	-11.060	0.316	-0.023
	16.18	42.17	2.637	-13.370	0.722	-7.345	0.409	-10.410	0.348	-0.040
	16.19	42.18	1.927	-10.370	0.903	-7.717	0.418	-10.990	0.332	-0.027
	16.20	42.19	1.422	-10.370	1.273	-7.853	0.467	-11.400	0.316	0.000
	16.21	42.20	1.403	-11.520	0.860	-7.783	0.477	-11.440	0.332	0.030
	16.22	42.21	1.637	-12.690	1.049	-7.700	0.467	-11.420	0.301	0.016
	16.23	42.22	2.011	-13.720	1.212	-7.634	0.516	-11.410	0.301	-0.008
	16.24	42.23	2.132	-14.790	0.920	-7.719	0.584	-11.600	0.316	0.024
	16.25	42.24	3.601	-16.260	1.247	-8.371	1.129	-12.350	0.332	0.005
	16.26	42.25	4.442	-18.290	1.892	-9.636	1.819	-13.850	0.301	0.020
			4.620	-20.060	2.089	-10.830	1.936	-15.390	0.316	0.000
49	12.67									
64	12.91		0.533	0.344	0.771	1.080	0.117	-0.581	0.206	0.569
82	13.28		0.421	0.655	0.710	1.362	0.136	-0.480	0.221	-0.030
94	13.57		0.644	0.687	0.466	0.622	0.136	-0.132	0.237	-0.487
94	13.58		0.721	-0.120	0.607	0.229	0.136	0.108	0.253	-0.551
108	13.71		0.534	-0.105	0.589	0.230	0.136	0.169	0.317	-0.464
	13.97		0.646	0.046	0.546	0.202	0.156	0.712	0.253	0.891
138	14.17		0.821	0.300	0.743	0.419	0.117	0.889	0.253	1.012
	15.79		0.772	0.209	0.588	-0.173	0.097	-0.387	0.142	-0.608
	15.90		0.576	0.284	0.541	0.200	0.117	0.126	0.222	-0.411
	15.93		0.706	0.113	0.507	-0.136	0.136	-0.287	0.206	-0.886
			0.762	0.198	0.567	-0.169	0.107	-0.598	0.142	-0.803

APPENDIX M

Pushrod Loads

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
		24.1						
		24.2						
2	12.2	25.1	2.882	-5.17	9.708	-4.73	6.288	-6.20
	12.3	25.2	2.022	-5.77	8.416	-4.59	7.876	-6.19
	12.4		3.380	-4.04	9.228	-3.92	8.765	-5.39
8	12.5	25.3	2.505	-3.96	9.311	-5.05	6.272	-6.38
9	12.6	25.4	3.561	-4.48	8.946	-5.04	7.415	-6.42
10	12.7	25.5	5.282	-5.24	8.565	-4.90	6.844	-6.29
11	12.8	25.6	2.565	-3.00	9.592	-5.05	5.542	-6.10
12	12.9	25.7	3.848	-2.71	9.460	-4.83	5.732	-5.87
18	12.10	28.8	2.505	-4.33	8.946	-5.15	6.081	-6.57
19	12.11	25.9	3.607	-4.63	9.675	-5.38	5.939	-7.18
20	12.12	25.10	4.044	-5.09	10.060	-5.36	5.764	-7.13
21	12.13	25.11	2.837	-4.04	8.317	-4.73	6.034	-6.04
22	12.14	25.12	3.109	-4.04	8.201	-4.50	6.066	-5.86
26	12.15	25.13	2.792	-4.41	8.615	-5.06	6.081	-6.57
27	12.16	25.14	3.833	-3.95	8.582	-4.66	5.891	-6.31
28	12.17	25.15	2.822	-4.94	8.631	-5.16	6.399	-6.52
1	12.18	25.16	2.565	1.37	8.714	-1.82	4.049	-3.11
	12.19	25.17	1.720	-1.47	9.261	-2.82	5.256	-4.19
	12.20	25.18	2.701	-2.59	8.664	-3.01	5.843	-4.49
	12.21	25.19	2.913	-2.13	9.079	-2.92	5.653	-4.43
	12.22	25.20	4.723	-2.06	9.542	-2.53	7.368	-3.87
	12.23	25.21	7.681	-1.58	11.960	1.69	11.670	-2.71
3	12.24	25.22	4.754	-1.56	7.207	2.03	6.145	-3.93
4	12.25	25.23	6.368	-1.75	8.615	1.52	7.288	-3.67
5	12.26	25.24	7.742	-2.07	10.390	1.27	8.955	-3.24
6	12.27	25.25	3.561	-1.49	6.378	2.69	5.542	-4.00
7	12.28	25.26	3.109	-1.37	5.848	3.55	5.573	-4.07

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
13	12.29	25.27	5.252	-1.86	7.323	2.00	6.177	-4.01
14	12.30	25.28	6.353	-2.13	7.538	1.77	6.081	-3.87
15	12.31		7.545	-2.33	8.234	1.53	5.939	-4.19
16	12.32	25.29	4.723	-1.52	6.941	2.30	5.923	-3.73
17	12.33	25.30	5.010	-1.37	6.676	2.65	5.780	-3.53
23	12.34	25.31	5.659	-1.86	7.173	2.01	5.875	-3.94
24	12.35	25.32	7.002	-1.81	6.577	2.17	6.288	-4.14
25	12.36	25.33	5.040	-2.15	7.803	2.33	6.034	-3.47
30	12.37	25.34	5.418	-7.23	10.570	-2.95	9.733	-7.30
	12.38	25.35	4.784	-7.58	10.040	-3.13	8.955	-7.37
	12.39	25.36	4.090	-7.67	9.460	-3.20	8.527	-7.08
	12.40	25.37	3.395	-6.69	8.615	-3.11	8.701	-6.69
35	12.42	26.1	3.654	0.30	7.032	2.61	3.722	0.81
	12.43	26.2	3.214	-1.59	8.009	0.98	4.973	-0.48
	12.44	26.3	3.715	-3.02	9.233	-0.15	5.543	-1.43
	12.45	26.4	3.366	-3.99	9.515	-1.07	6.415	-2.22
	12.46	26.5	3.366	-4.88	9.779	-1.82	7.539	-2.78
		26.6						
36	12.47	26.7	3.366	-4.58	8.091	-0.88	5.702	-2.49
	12.48	26.8	3.609	-5.49	8.174	-1.73	6.462	-3.18
	12.49	26.9						
	12.50	26.10	3.548	-6.33	8.290	-2.43	6.953	-3.72
	12.51	26.11	4.033	-7.06	9.184	-2.99	7.666	-4.16
	12.52	26.12	3.881	-7.30	9.713	-3.35	7.602	-4.57
37	12.53	26.13	4.640	-4.64	9.018	-2.96	7.238	-4.07
38	12.54	26.14	5.246	-5.53	9.233	-3.27	6.937	-4.56
39	12.55	26.15	6.156	-6.06	9.382	-3.49	6.652	-4.78
40	12.56	26.16	5.019	-4.20	8.604	-2.88	7.080	-3.89
41	12.57	26.17	5.064	-3.76	8.522	-2.66	6.731	-3.66

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
42	12.58	26.18						
	12.59	26.19						
	12.60	26.20	4.867	-4.74	8.638	-3.23	7.254	-4.22
43	12.61	26.21	6.686	-5.02	8.704	-3.27	6.129	-4.49
44	12.62	26.22	6.944	-5.04	8.952	-3.18	5.955	-4.35
45	12.63	26.23	5.155	-5.12	8.737	-3.38	7.349	-4.21
47	12.64	26.24	4.624	-4.86	8.538	-3.35	7.111	-4.21
48	12.65	26.25	6.262	-4.59	8.274	-3.36	6.969	-4.23
49	12.66	26.26	4.003	-5.08	8.654	-3.39	7.270	-4.15
51	12.68	27.1	2.623	-4.20	5.179	-1.50	3.009	0.10
	12.69	27.2	2.972	-4.99	5.593	-2.23	3.627	-0.56
	12.70	27.3	2.775	-5.48	5.940	-2.88	4.086	-1.03
	12.71	27.4	2.972	-5.90	6.486	-3.41	4.609	-1.41
	12.72	27.5	2.987	-6.25	7.099	-3.88	5.037	-1.73
	12.73	27.6	4.943	-4.64	8.555	-4.28	5.781	-2.11
	12.74	27.7	6.019	-4.61	9.432	-4.49	6.937	-2.51
	12.75	27.8	6.216	-5.02	10.190	-4.09	7.792	-2.64
50	12.76	27.9	6.323	-2.34	8.753	0.55	6.129	-0.32
	12.77	27.10	5.276	-3.68	8.472	-0.73	6.383	-0.88
	12.78	27.11	4.791	-4.52	8.786	-1.49	6.114	-1.31
52	12.79	27.12	5.731	-3.35	8.472	-0.39	6.098	-0.70
53	12.80	27.13	4.549	-4.15	8.025	-1.17	5.733	-1.17
54	12.81	27.14	5.822	-4.84	8.952	-1.83	6.177	-1.80
		27.15						
55	12.82	27.16	6.459	-2.80	8.836	0.22	5.971	-0.60
57	12.83	27.17	5.868	-3.40	8.869	-0.50	5.876	-0.82
58	12.84	27.18	6.338	-3.90	8.075	-0.87	5.037	-1.24
		27.19						
59	12.85	27.20	6.838	-3.87	7.992	-0.99	5.116	-1.19

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
60	12.86	27.21	6.232	-3.38	9.266	-0.42	6.304	-0.97
62	12.87	27.22						
	12.88	27.23	5.868	-3.49	8.737	-0.54	5.860	-0.71
63	12.89	27.24	7.020	-3.24	8.555	-0.53	6.066	-0.67
64	12.90	27.25	5.079	-3.56	8.571	-0.64	5.448	-0.41
66	13.1	28.1	1.653	-4.44	4.116	-3.89	1.998	-4.74
	13.3	28.2	2.108	-4.16	4.744	-4.35	1.934	-5.38
	13.4	28.3	2.806	-3.67	5.405	-4.38	2.806	-5.10
	13.5	28.4	4.308	-2.84	8.629	-2.95	4.931	-4.13
	13.6	28.5	5.339	-2.23	10.100	-1.28	6.485	-3.48
65	13.7	28.6	4.975	1.15	4.232	0.07	2.711	-2.62
	13.8	28.7	4.702	-1.55	5.323	-1.12	3.472	-3.15
	13.9	28.8	4.383	-1.99	6.034	-1.70	4.186	-3.15
	13.10	28.9	5.051	-1.91	8.116	-1.38	5.962	-3.07
	13.11	28.10	6.188	-1.77	11.620	0.92	7.737	-3.24
67	13.12	28.11	6.128	-1.12	7.753	3.83	4.122	-2.85
68	13.13	28.12	5.824	-1.71	7.885	2.64	4.757	-2.87
69	13.14	28.13	6.932	-2.15	8.497	1.87	6.564	-3.16
70	13.15	28.14	5.460	-0.85	8.050	5.17	3.869	-2.59
71	13.16	28.15	4.535	-0.50	7.092	4.58	3.647	-2.35
72	13.17	28.16	5.309	-1.64	7.191	1.80	4.233	-2.87
73	13.18	28.17	6.780	-2.29	6.546	1.46	3.821	-2.98
74	13.19	28.18	7.402	-2.42	6.711	1.31	3.472	-3.29
75	13.20	28.19	5.248	-1.32	7.240	2.19	3.964	-2.77
76	13.21	28.20	5.066	-1.33	7.191	2.57	3.853	-2.44
77	13.22	28.21	5.415	-1.92	6.744	1.67	4.011	-2.96
78	13.23	28.22	7.356	-1.76	6.199	1.87	4.233	-2.99
79	13.24	28.23	4.945	-2.03	7.075	1.69	3.758	-2.46
80	13.25	28.24	8.206	-1.32	11.180	2.55	4.107	-3.22

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
81	13.26	28.25	7.720	-1.61	12.500	1.79	4.646	-3.18
82	13.27	28.26	3.655	-3.30	5.439	-0.86	3.853	-4.25
80A	13.29	29.1	4.597	-5.23	7.269	-2.54	5.161	-3.72
	13.30	29.2	4.369	-5.81	7.966	-2.78	5.510	-3.92
	13.31	29.3	4.202	-6.37	7.866	-2.92	5.637	-4.12
	13.32	29.4	4.005	-6.79	7.949	-3.08	5.574	-4.40
	13.33	29.5	3.747	-7.25	8.215	-3.21	5.621	-4.57
		29.6						
81A	13.34	29.7	2.609	-6.45	6.356	-2.83	4.478	-4.18
	13.35	29.8	2.716	-7.00	6.572	-3.37	4.398	-4.36
	13.36	29.9	2.367	-7.47	7.783	-3.82	4.414	-4.71
	13.37	29.10	2.882	-7.80	7.070	-3.60	4.446	-4.97
	13.38	29.11	3.140	-8.10	6.837	-3.74	4.351	-5.17
	13.39	29.12	3.368	-8.43	6.655	-3.96	4.557	-5.40
	13.40	29.13	3.474	-8.74	6.920	-4.24	4.541	-5.36
	13.41	29.14	3.671	-8.82	7.252	-4.48	4.684	-5.46
	13.42	29.15	3.899	-8.94	8.065	-4.66	4.970	-5.46
81B	13.43	29.16	2.503	-12.34	6.223	-7.71	3.954	-10.44
	13.44	29.17	2.989	-12.20	5.842	-8.52	3.954	-10.56
	13.45	29.18	2.958	-11.92	5.443	-9.37	3.446	-10.61
	13.46	29.19	3.338	-11.01	5.510	-9.17	3.509	-10.46
	13.47	29.20	3.504	-10.09	5.344	-8.58	3.605	-10.32
	13.48	29.21	3.702	-9.89	5.593	-8.56	3.986	-10.35
87	13.49	29.22	3.793	-8.46	5.842	-5.94	3.366	-11.02
88	13.50	29.23	5.143	-8.34	5.626	-6.03	3.398	-11.07
89	13.51	29.24	5.037	-8.37	6.173	-6.64	3.096	-11.07
90	13.52	29.25	3.246	-8.50	6.738	-6.18	3.636	-10.92
91	13.53	29.26	2.852	-9.32	7.186	-6.59	3.319	-10.73
92	13.54	29.27	4.172	-9.61	5.842	-6.74	3.462	-11.00

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
93	13.55	29.28	4.081	-9.71	5.742	-6.78	3.700	-11.28
94	13.56	29.29	3.262	-9.45	6.456	-6.77	2.953	-11.17
		30.1						
95	13.59	30.2	5.795	-17.86	6.953	-16.91	4.970	-16.48
	13.60	30.3	5.886	-17.56	6.821	-16.88	4.589	-16.51
	13.61	30.4	5.689	-17.06	6.771	-16.40	4.843	-16.91
101	13.62	30.5	5.704	-16.33	7.169	-16.01	5.034	-17.32
95A	13.63	30.6	5.416	-17.31	6.920	-17.42	4.700	-17.20
101A	13.64	30.7	5.492	-16.00	7.584	-16.15	5.288	-17.56
102	13.65	30.8	6.978	-16.20	6.953	-16.53	4.780	-17.77
103	13.66	30.9	8.010	-16.11	7.999	-17.65	5.129	-17.94
104	13.67	30.10	4.506	-15.76	8.547	-16.76	5.208	-17.68
106	13.68	30.11	5.962	-15.87	7.534	-16.86	4.923	-17.75
107	13.69	30.12	5.689	-15.85	6.472	-16.93	5.272	-17.86
108	13.70	30.13	5.386	-15.11	7.916	-16.58	4.573	-17.80
109	13.72	31.1	2.464	-13.90	5.695	-9.19	3.633	-8.99
110	13.73	31.2	3.720	-14.24	5.974	-9.01	3.109	-9.37
111	13.74	31.3	4.424	-14.03	6.351	-8.66	3.427	-9.34
112	13.75	31.4	1.714	-13.79	5.547	-9.09	3.506	-8.92
113	13.76	31.5	3.964	-12.94	6.236	-8.61	4.236	-8.84
114	13.77	31.6	6.536	-17.06	6.483	-16.49	4.537	-16.80
115	13.78	31.7	8.648	-16.86	7.352	-17.02	4.855	-17.75
116	13.79	31.8	8.847	-16.75	6.959	-17.43	4.791	-17.92
117	13.80	31.9	4.470	-16.42	6.401	-16.72	4.664	-17.68
118	13.81	31.10	5.801	-16.33	6.909	-17.40	5.219	-17.67
128	13.82	31.11	6.398	-16.90	6.844	-17.13	4.775	-17.57
129	13.83	31.12	8.357	-16.42	6.581	-17.63	4.585	-17.88
130	13.84	31.13	8.817	-16.05	7.123	-17.77	4.379	-17.63
123	13.85		5.817	-16.34	7.320	-17.40	4.617	-17.23

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
122	13.86	31.14	6.352	-13.11	6.909	-14.65	4.997	-15.69
124	13.87	31.15	4.745	-11.23	7.073	-12.90	4.918	-13.52
122A	13.88	31.16	5.250	-12.54	7.139	-13.88	4.870	-15.00
122B	13.89		5.112	-14.53	6.236	-16.08	4.696	-15.98
124A	13.90	31.17	5.005	-13.30	6.696	-15.02	4.506	-14.72
125	13.91	31.18	4.179	-7.06	6.384	-8.72	5.362	-6.23
126	13.92		5.174	-7.76	6.335	-8.84	5.521	-7.07
127	13.93	31.19	6.521	-7.70	6.597	-9.34	6.282	-7.31
119	13.94	31.20	4.179	-6.91	5.990	-8.03	4.966	-5.72
120	13.95	31.21	4.133	-7.71	6.778	-7.62	4.870	-6.51
121	13.96	31.22	3.842	-6.23	5.793	-7.91	4.759	-4.75
131	14.1	32.1	2.452	-10.51	5.388	-4.49	5.104	-4.44
132	14.2		2.982	-10.12	5.305	-4.42	5.041	-4.36
133	14.3	32.2	4.874	-9.61	5.238	-4.27	4.978	-4.42
133A	14.4	32.3	6.554	-9.34	5.355	-4.32	5.057	-4.42
134	14.5	32.4	2.936	-10.06	4.723	-5.19	5.120	-4.43
135	14.6	32.5	3.769	-10.56	4.507	-5.44	4.724	-4.46
139	14.7	32.6	3.269	-10.39	4.922	-4.95	4.819	-4.13
140	14.8	32.7	4.162	-10.48	5.172	-4.85	4.581	-4.35
141	14.9	32.8	5.570	-10.25	5.504	-4.45	4.898	-4.28
142	14.10	32.9	3.390	-10.82	4.507	-5.24	4.930	-4.43
143	14.11	32.10	3.345	-10.74	4.107	-5.40	4.375	-4.36
136	14.12	32.11	3.390	-10.43	4.590	-5.01	4.613	-3.92
137	14.13	32.12	3.511	-10.85	4.640	-5.03	5.057	-4.15
138	14.14	32.13	3.542	-10.15	4.556	-5.05	4.978	-3.85
		33.1						
		33.2						
		33.3						
	15.1	34.1						

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
	15.2	34.2						
	15.3	34.3	6.188	0.22	5.185	-4.14	3.361	-3.07
	15.4	34.4	3.102	-3.52	3.552	-5.47	2.600	-4.13
	15.5	34.5	2.749	-4.88	3.081	-5.92	2.378	-4.67
	15.6	34.6	2.472	-5.28	3.030	-6.33	2.410	-5.10
	15.7	34.7	2.042	-5.87	3.030	-6.77	2.331	-5.63
	15.8	34.8	1.551	-6.23	2.761	-7.27	2.188	-6.15
	15.9	34.9	1.259	-6.68	3.114	-7.60	2.204	-6.61
	15.10	34.10	1.566	-6.34	3.266	-7.73	2.394	-7.04
	15.11	34.11	1.643	-6.57	3.552	-8.08	2.553	-7.66
	15.12	34.12	2.395	-6.38	3.990	-8.34	3.266	-7.96
	15.13	34.13	3.440	-6.12	4.428	-8.75	3.805	-8.48
	15.14	34.14	4.054	-5.64	5.421	-7.90	4.154	-9.02
	15.15	34.15	4.192	-6.03	5.976	-7.91	4.376	-8.33
	15.16	34.16	5.098	-5.86	7.357	-7.61	5.121	-8.16
	15.17	34.17	6.157	-5.71	9.024	-7.19	5.708	-7.95
	15.18	34.18	7.355	-5.27	10.540	-6.52	6.738	-7.51
	15.19	34.19	8.737	-4.83	12.690	-5.93	9.164	-6.95
	15.20	34.20	3.639	3.28	4.781	1.27	2.727	-4.09
	15.21	34.21	3.762	3.61	5.118	2.17	2.917	-3.99
	15.23	35.1	4.422	3.75	5.556	3.34	2.870	-3.92
	15.24	35.2	5.205	3.97	6.296	4.56	2.965	-3.71
	15.25	35.3	3.042	-0.45	4.664	-0.03	3.961	0.82
	15.26	35.4	2.909	-1.05	4.864	-0.51	3.373	0.28
	15.27	35.5	2.688	-1.66	4.430	-1.07	2.927	-0.34
	15.28	35.6	2.451	-2.32	4.179	-1.68	2.657	-1.00
	15.29	35.7	2.200	-2.84	4.246	-2.19	2.339	-1.51
	15.30	35.8	1.964	-3.36	4.028	-2.79	2.323	-2.00
	15.31	35.9	2.023	-3.86	3.978	-3.21	2.291	-2.38

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
	15.32	35.10	1.669	-4.27	3.661	-3.65	2.180	-2.71
	15.33	35.11	1.861	-4.58	3.728	-4.00	2.211	-3.03
	15.34	35.12	1.861	-4.86	3.761	-4.30	2.291	-3.27
	15.35	35.13	1.757	-5.15	3.778	-4.63	2.291	-3.52
	15.36	35.14	1.610	-5.43	3.794	-4.95	2.291	-3.79
	15.37	35.15	1.521	-5.74	3.845	-5.19	2.402	-3.95
	15.38	35.16	1.757	-5.99	4.296	-5.60	2.657	-4.09
	15.39	35.17	1.743	-6.23	4.262	-6.15	2.752	-4.33
	15.40	35.18	1.654	-6.35	4.129	-6.68	2.752	-4.64
	15.41	35.19	1.757	-6.35	4.079	-6.90	2.816	-4.75
	15.42	35.20	1.728	-6.46	3.962	-7.10	2.848	-4.86
	15.43	35.21	1.743	-6.62	4.079	-7.43	2.895	-5.06
	15.44	35.22	1.875	-6.67	4.062	-7.65	2.991	-5.12
	15.45	35.23	1.831	-6.79	4.012	-7.91	2.895	-5.27
	15.46	35.24	1.757	-7.00	4.229	-8.23	2.673	-5.46
	15.47	35.25	1.846	-7.06	4.329	-8.42	2.832	-5.61
	15.48	35.26	1.949	-7.11	4.346	-8.64	2.848	-5.67
	15.49	35.27	2.141	-7.24	4.396	-8.94	3.198	-5.99
		35.28						
	15.50	35.29	2.614	-7.49	4.613	-6.69	3.723	-6.06
	15.51	35.30	2.289	-7.59	4.664	-6.93	3.102	-6.22
	15.54	36.1	2.968	-7.83	4.998	-7.11	3.739	-6.43
		36.2						
	15.55	37.1	3.397	-8.01	5.148	-7.32	4.296	-6.60
	15.57	38.1	1.743	-8.26	4.313	-3.64	2.547	-3.26
	15.58	38.2	6.533	-5.20	8.492	-6.58	5.821	-7.49
	15.59	38.3	6.500	3.38	5.151	-1.03	4.002	-0.84
	15.60	38.4	5.687	2.37	5.233	-1.43	4.034	-1.20
	15.61	38.5	5.381	1.44	3.962	-1.93	3.687	-1.51

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
	15.62	38.6	4.645	0.21	4.061	-2.30	3.671	-2.02
	15.63	38.7	3.664	-1.90	3.368	-2.97	3.104	-2.64
	15.64	38.8	3.219	-3.07	3.467	-3.37	2.805	-3.30
	15.65	38.9	2.483	-3.95	3.269	-3.75	2.316	-3.88
	15.66	38.10	1.901	-4.80	3.120	-4.16	2.253	-4.46
	15.67	38.11	1.395	-5.21	3.137	-4.46	2.363	-4.78
	15.68	38.12	1.272	-5.63	3.005	-4.83	2.269	-5.21
	15.69	38.13	1.901	-5.19	3.203	-5.04	2.568	-5.52
	15.70	38.14	2.851	-4.49	3.467	-5.14	2.852	-5.79
	15.71	38.15	2.943	-4.33	3.830	-5.39	3.041	-5.94
	15.72	38.16	3.480	-4.08	4.078	-5.40	3.577	-5.97
	15.73	38.17	3.817	-3.95	4.556	-5.56	3.845	-6.17
	15.74	38.18	4.522	-3.83	5.167	-5.55	4.301	-6.13
	15.75	38.19	5.350	-3.71	5.762	-5.61	4.837	-6.18
	15.76	38.20	5.994	-3.63	6.752	-5.60	5.483	-6.18
	15.77	38.21	7.312	-3.44	7.759	-5.38	6.413	-5.89
	15.78	38.22	3.020	-2.13	3.863	-5.31	3.025	-5.89
	15.80	39.1	4.629	6.74	4.391	-2.24	3.592	-1.46
	15.81	39.2	2.192	-5.48	3.417	-5.88	2.663	-6.27
	15.82	39.3	4.691	-0.12	4.474	-1.32	3.403	-1.37
	15.83	39.4	3.326	-2.77	3.582	-2.60	3.262	-2.84
	15.84	39.5	2.499	-4.25	3.186	-3.39	2.411	-4.12
	15.85	39.6	2.146	-5.02	2.889	-4.02	2.679	-4.90
	15.86	39.7	2.867	-5.55	3.401	-4.58	2.789	-5.72
	15.87	39.8	3.234	-5.36	4.144	-4.80	3.088	-5.89
	15.88	39.9	4.384	-5.21	5.217	-4.78	3.908	-5.99
	15.89	39.10	6.208	-4.73	6.736	-4.56	5.546	-5.86
	15.91	40.1	8.308	-4.45	9.757	-4.41	7.468	-5.55
	15.92	40.2	2.959	-2.94	3.863	-4.44	2.789	-5.77

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
	16.1	41.1	6.009	-6.42	7.297	-5.30	5.546	-6.18
	16.2	42.1	5.994	-6.01	6.983	-5.16	5.499	-6.23
	16.3	42.2	2.330	-3.54	2.823	-3.28	2.616	-4.58
	16.4	42.3	1.757	-4.89	3.181	-4.59	2.661	-4.81
	16.5	42.4	3.513	5.29	5.129	8.14	4.024	10.40
	16.6	42.5	3.740	5.89	5.379	8.97	3.834	8.43
	16.7	42.6	4.149	5.87	5.879	8.34	4.008	7.76
	16.8	42.7	3.649	1.20	5.978	3.01	3.960	3.03
	16.9	42.8	3.089	-1.55	5.346	-0.33	3.485	-0.08
	16.10	42.9	1.999	-3.59	4.679	-2.89	2.946	-1.28
	16.11	42.10	2.332	-4.06	4.646	-3.66	3.232	-1.74
	16.12	42.11	2.907	-4.66	4.729	-4.08	3.691	-2.12
	16.13	42.12	3.013	-5.77	5.029	-4.63	3.913	-2.97
	16.14	42.13	3.210	-6.16	5.063	-4.92	4.309	-3.29
	16.15	42.14	4.134	4.86	6.328	7.56	4.483	8.02
	16.16	42.15	2.650	-1.46	68.960	-0.62	3.358	1.04
	16.17	42.16	2.968	-0.93	4.463	0.43	3.263	1.36
	16.18	42.17	3.892	1.27	4.863	1.40	4.198	2.76
	16.19	42.18	2.922	-1.66	4.413	-0.67	2.899	0.51
	16.20	42.19	1.620	-3.79	4.263	-1.69	2.487	-0.62
	16.21	42.20	1.590	-4.23	4.130	-2.05	2.630	-0.96
	16.22	42.21	1.696	-4.50	4.163	-2.30	2.582	-1.24
	16.23	42.22	1.847	-4.92	4.130	-2.59	2.360	-1.77
	16.24	42.23	1.969	-5.57	4.147	-3.21	3.944	-3.67
	16.25	42.24	2.983	-6.72	4.863	-4.95	4.388	-5.19
	16.26	42.25	3.937	-8.78	4.596	-5.91	4.309	-6.33
			5.436	-10.71	4.846	-6.96	5.434	-7.72

Pushrod Loads

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Pushrod 1 Vibratory lb.	Pushrod 1 Mean lb.	Pushrod 2 Vibratory lb.	Pushrod 2 Mean lb.	Pushrod 3 Vibratory lb.	Pushrod 3 Mean lb.
49	12.67							
64	12.91		0.212	1.73	0.165	0.56	0.253	-1.42
82	13.28		0.273	0.19	0.199	1.15	0.174	0.15
94	13.57		0.303	0.53	0.198	2.01	0.159	-0.33
94	13.58		0.288	0.98	0.199	2.70	0.191	-0.25
108	13.71		0.288	0.94	0.216	2.50	0.222	-0.34
	13.97		0.243	2.37	0.216	2.06	0.206	-1.23
138	14.17		0.260	2.67	0.213	0.21	0.175	-1.32
	15.79		0.166	-1.59	0.216	1.76	0.127	0.06
	15.90		0.261	0.88	0.182	-1.67	0.158	0.08
	15.93		0.230	-0.85	0.165	2.64	0.189	2.08
			0.199	0.70	0.149	2.95	0.189	1.82

APPENDIX N

WITNESS System

Steady-State Data

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinates Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
		24.1	NASA CN 2	0.00	-196.20	0.00	-0.05	-0.25	792.0	81.70	-2.24	-2.36	1.45
		24.2	NASA CN 2	0.00	-145.24	0.03	-0.08	-0.42	792.6	83.66	-3.35	-3.21	2.46
2	12.2	25.1	NASA CN 8-28	0.00	122.32	-1.04	-12.06	34.46	792.6	61.11	-485.69	-536.57	-200.28
	12.3	25.2	NASA CN 8-28	0.00	108.70	-0.77	-7.00	57.37	794.6	61.22	-276.60	-333.10	-328.57
	12.4												
8	12.5	25.3	NASA CN 8-28	0.00	112.08	-0.63	-8.25	53.16	793.2	61.23	-329.70	-385.59	-305.46
9	12.6	25.4	NASA CN 8-28	0.00	102.41	-0.64	-3.66	72.74	791.6	61.11	-139.56	-200.30	-414.98
10	12.7	25.5	NASA CN 8-28	0.00	92.21	-0.82	3.33	102.59	791.8	61.21	152.09	87.01	-576.87
11	12.8	25.6	NASA CN 8-28	0.00	121.32	-0.75	-11.66	37.08	792.6	61.24	-470.23	-528.57	-211.00
12	12.9	25.7	NASA CN 8-28	0.00	131.81	-0.47	-14.53	25.08	793.0	61.08	-590.64	-647.22	-146.47
18	12.10	28.8	NASA CN 8-28	0.00	112.94	-0.62	-8.58	51.52	791.6	61.18	-343.00	-408.26	-293.33
19	12.11	25.9	NASA CN 8-28	0.00	111.09	-0.78	-7.77	55.90	792.8	60.98	-309.13	-373.78	-319.99
20	12.12	25.10	NASA CN 8-28	0.00	107.40	-0.86	-6.27	62.88	792.0	61.10	-246.49	-312.15	-362.36
21	12.13	25.11	NASA CN 8-28	0.00	113.28	-0.14	-9.03	47.31	791.8	61.13	-364.39	-420.52	-269.44
22	12.14	25.12	NASA CN 8-28	0.00	114.72	-0.05	-9.63	44.03	791.8	61.16	-389.98	-444.56	-250.21
26	12.15	25.13	NASA CN 8-28	0.00	110.39	-0.27	-7.83	53.56	792.0	61.23	-314.22	-374.05	-306.88
27	12.16	25.14	NASA CN 8-28	0.00	108.42	-0.15	-7.18	55.92	792.0	61.25	-289.13	-348.68	-320.04
28	12.17	25.15	NASA CN 8-28	0.00	111.45	-0.68	-8.22	51.98	793.0	61.20	-326.50	-394.04	-299.29
1	12.18	25.16	NASA CN 1-33	0.00	125.52	0.81	-12.92	33.29	792.2	81.13	-523.25	-584.00	-195.49
	12.19	25.17	NASA CN 1-33	0.00	118.56	1.13	-10.82	51.31	792.6	81.11	-437.50	-493.83	-296.11
	12.20	25.18	NASA CN 1-33	0.00	112.52	1.36	-8.46	72.45	792.0	81.14	-339.42	-393.75	-414.30
	12.21	25.19	NASA CN 1-33	0.00	112.89	1.50	-8.53	72.67	793.0	81.13	-343.27	-396.06	-416.29
	12.22	25.20	NASA CN 1-33	0.00	106.66	2.19	-5.58	97.95	792.0	81.24	-221.60	-268.63	-557.45
	12.23	25.21	NASA CN 1-33	0.00	100.36	2.94	-2.12	124.85	791.0	81.08	-78.16	-121.04	-709.49
3	12.24	25.22	NASA CN 1-33	0.00	107.66	1.30	-6.65	86.76	792.0	81.27	-262.03	-316.95	-497.79
4	12.25	25.23	NASA CN 1-33	0.00	104.74	1.53	-5.26	101.41	792.0	81.12	-204.09	-255.55	-584.61
5	12.26	25.24	NASA CN 1-33	0.00	103.03	1.63	-4.24	117.73	792.8	81.29	-159.77	-208.40	-680.80
6	12.27	25.25	NASA CN 1-33	0.00	110.69	1.34	-8.13	71.17	792.0	81.10	-325.27	-381.69	-409.69
7	12.28	25.26	NASA CN 1-33	0.00	113.31	1.09	-9.37	58.36	794.0	81.19	-376.43	-434.99	-337.52
13	12.29	25.27	NASA CN 1-33	0.00	105.31	1.81	-6.03	87.45	791.2	81.17	-238.74	-287.73	-499.29
14	12.30	25.28	NASA CN 1-33	0.00	105.56	2.06	-6.26	90.43	791.8	81.16	-250.23	-299.77	-521.84
15	12.31												
16	12.32	25.29	NASA CN 1-33	0.00	104.80	1.79	-5.95	84.12	792.0	81.14	-235.84	-291.30	-479.47
17	12.33	25.30	NASA CN 1-33	0.00	104.52	1.92	-5.88	81.10	792.8	81.27	-233.83	-289.88	-460.52
23	12.34	25.31	NASA CN 1-33	0.00	105.52	1.83	-6.18	86.82	791.2	81.09	-245.62	-298.75	-498.38

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinate Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
24	12.35	25.32	NASA CN 1-33	0.00	107.49	2.67	-6.69	87.40	792.4	81.24	-272.00	-314.96	-502.65
25	12.36	25.33	NASA CN 1-33	0.00	107.72	1.35	-6.69	87.13	792.4	81.18	-263.17	-322.45	-503.04
30	12.37	25.34	NASA CN 30	0.00	143.47	-0.57	-16.95	41.44	793.4	61.08	-688.79	-767.10	-247.86
	12.38	25.35	NASA CN 30	0.00	137.33	-0.59	-14.85	50.79	791.8	61.13	-601.21	-684.19	-300.04
	12.39	25.36	NASA CN 30	0.00	130.62	-0.45	-12.13	62.53	792.4	61.16	-488.68	-573.79	-365.19
	12.40	25.37	NASA CN 30	0.00	127.30	-0.51	-10.71	67.98	790.6	61.21	-429.25	-517.61	-394.58
35	12.42	26.1	NASA CN 35	0.00	126.15	-1.97	-13.47	25.93	792.0	71.12	-536.10	-600.02	-154.48
	12.43	26.2	NASA CN 35	0.00	118.37	-1.83	-11.18	37.60	791.6	71.15	-441.66	-507.06	-218.91
	12.44	26.3	NASA CN 35	0.00	111.39	-1.82	-8.56	51.20	791.4	71.18	-332.23	-402.64	-294.48
	12.45	26.4	NASA CN 35	0.00	102.67	-1.61	-4.95	67.15	785.8	71.23	-181.74	-251.55	-379.86
	12.46	26.5	NASA CN 35	0.00	101.85	-1.63	-4.56	68.99	792.4	71.24	-165.01	-235.69	-388.22
		26.6	NASA CN 35	0.00	96.77	-0.45	-1.24	88.02	789.6	71.09	-32.37	-101.77	-495.02
36	12.47	26.7	NASA 36-51	0.00	125.38	-1.43	-13.25	27.56	792.2	61.10	-532.44	-591.96	-162.98
	12.48	26.8	NASA 36-51	0.00	115.80	-1.71	-10.22	41.45	793.2	61.15	-405.18	-473.14	-240.15
	12.49	26.9	NASA 36-51	0.00	106.08	-1.43	-6.32	57.39	787.6	61.21	-244.67	-316.43	-327.45
	12.50	26.10	NASA 36-51	0.00	105.47	-1.44	-6.03	58.60	791.8	61.22	-232.48	-305.00	-334.15
	12.51	26.11	NASA 36-51	0.00	95.73	-1.72	-0.36	82.18	791.4	61.13	5.29	-76.47	-462.96
	12.52	26.12	NASA 36-51	0.00	87.98	-2.11	5.85	108.01	791.8	61.20	266.68	172.45	-605.78
37	12.53	26.13	NASA 36-51	0.00	98.81	-1.47	-2.66	70.98	791.2	61.13	-91.87	-163.40	-397.29
38	12.54	26.14	NASA 36-51	0.00	93.01	-1.39	1.27	88.30	792.0	61.19	71.18	-7.21	-494.34
39	12.55	26.15	NASA 36-51	0.00	87.81	-1.26	5.68	109.49	793.6	61.27	254.11	168.26	-617.67
40	12.56	26.16	NASA 36-51	0.00	105.38	-1.15	-6.07	57.29	792.2	61.26	-235.78	-306.98	-323.40
41	12.57	26.17	NASA 36-51	0.00	112.17	-0.93	-8.97	45.28	792.6	61.17	-357.40	-421.93	-257.02
42	12.58	26.18	NASA 36-51	0.00	99.50	-1.43	-2.82	71.99	792.2	61.27	-98.81	-177.43	-406.61
	12.59	26.19	NASA 36-51	0.00	100.62	-1.31	-3.46	69.12	789.0	61.08	-126.11	-201.16	-391.37
	12.60	26.20	NASA 36-51	0.00	100.27	-1.28	-3.19	70.55	791.8	61.17	-115.02	-190.87	-399.61
43	12.61	26.21	NASA 36-51	0.00	98.47	-1.54	-2.22	75.75	792.2	61.23	-73.60	-150.89	-431.33
44	12.62	26.22	NASA 36-51	0.00	97.08	-1.92	-1.39	79.64	791.8	61.10	-36.62	-114.55	-453.54
45	12.63	26.23	NASA 36-51	0.00	99.58	-1.14	-3.14	67.47	791.8	61.13	-113.93	-190.16	-374.60
47	12.64	26.24	NASA 36-51	0.00	99.95	-0.71	-3.14	70.08	790.8	61.17	-116.42	-192.07	-396.10
48	12.65	26.25	NASA 36-51	0.00	99.94	-0.82	-3.06	71.38	791.8	61.18	-114.23	-189.76	-402.75
49	12.66	26.26	NASA 36-51	0.00	100.86	-1.54	-3.51	68.46	792.0	61.20	-125.61	-209.05	-387.17
51	12.68	27.1	NASA 36-51	0.00	69.85	-1.03	-4.02	11.37	792.6	61.26	-155.41	-173.54	-70.37
	12.69	27.2	NASA 36-51	0.00	53.34	-1.79	0.82	32.44	791.8	61.10	47.95	21.26	-184.18
	12.70	27.3	NASA 36-51	0.00	36.32	-3.60	22.45	126.76	792.4	61.11	949.71	892.20	-712.89

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinate Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
	12.71	27.4	NASA 36-51	0.00	14.46	2.65	-42.27	-153.59	791.4	61.11	-1756.84	-1718.03	855.19
	12.72	27.5	NASA 36-51	0.00	-2.96	0.74	-23.54	-72.61	791.8	61.12	-973.46	-965.75	400.93
	12.73	27.6	NASA 36-51	0.00	-18.14	0.08	-19.77	-55.37	792.0	61.14	-814.77	-816.86	304.93
	12.74	27.7	NASA 36-51	0.00	-36.48	-0.45	-17.11	-43.97	791.0	61.18	-702.29	-709.54	240.18
	12.75	27.8	NASA 36-51	0.00	-47.28	-0.42	-16.21	-40.10	792.8	61.19	-665.80	-673.96	218.69
50	12.76	27.9	NASA 50-64	0.00	43.36	1.56	8.61	129.74	791.2	81.10	373.71	360.62	-739.20
	12.77	27.10	NASA 50-64	0.00	35.29	5.69	22.86	259.06	791.0	81.14	964.58	976.67	-1468.07
	12.78	27.11	NASA 50-64	0.00	29.69	19.66	66.44	640.92	792.4	81.18	2768.49	2861.13	-3596.62
52	12.79	27.12	NASA 50-64	0.00	36.03	6.53	19.67	228.91	791.6	81.18	822.95	831.44	-1294.22
53	12.80	27.13	NASA 50-64	0.00	34.34	6.87	25.59	292.82	792.4	81.20	1078.60	1090.61	-1664.47
54	12.81	27.14	NASA 50-64	0.00	32.51	9.54	35.50	400.58	796.8	81.22	1498.63	1521.88	-2284.79
		27.15	NASA 50-64	0.00	33.11	7.97	31.90	366.03	791.6	81.22	1350.94	1371.50	-2090.17
55	12.82	27.16	NASA 50-64	0.00	38.16	3.60	14.58	176.94	792.4	81.21	617.90	610.06	-1001.37
57	12.83	27.17	NASA 50-64	0.00	36.01	4.13	19.70	230.00	791.4	81.22	836.99	824.59	-1305.05
58	12.84	27.18	NASA 50-64	0.00	37.86	3.65	15.12	202.24	795.2	81.25	644.96	634.57	-1158.10
		27.19	NASA 50-64	0.00	38.18	4.40	14.45	195.83	792.6	81.24	612.13	617.75	-1121.10
59	12.85	27.20	NASA 50-64	0.00	41.03	3.80	9.86	163.84	791.4	81.27	420.36	427.76	-948.16
60	12.86	27.21	NASA 50-64	0.00	34.26	7.41	26.58	273.66	790.8	81.24	1111.01	1121.49	-1539.42
62	12.87	27.22	NASA 50-64	0.00	36.33	6.11	19.17	226.20	792.2	81.25	803.49	811.50	-1284.23
	12.88	27.23	NASA 50-64	0.00	36.51	6.36	19.03	224.64	792.6	81.26	796.20	809.97	-1274.07
63	12.89	27.24	NASA 50-64	0.00	36.04	9.51	20.65	237.76	792.4	81.28	845.84	885.91	-1333.39
64	12.90	27.25	NASA 50-64	0.00	36.78	6.21	18.39	217.30	790.2	81.28	771.19	771.30	-1234.04
66	13.1	28.1	NASA 66	0.00	87.30	-0.87	-6.34	5.85	791.6	61.08	-247.36	-268.79	-37.73
	13.3	28.2	NASA 66	0.00	51.83	-2.23	1.97	41.79	792.4	61.14	105.49	65.80	-237.83
	13.4	28.3	NASA 66	0.00	16.41	7.50	-49.77	-187.37	793.0	61.19	-2112.18	-2009.13	1030.70
	13.5	28.4	NASA 66	0.00	-14.38	2.00	-20.53	-58.33	791.0	61.23	-859.21	-836.28	317.10
	13.6	28.5	NASA 66	0.00	-23.62	1.55	-18.91	-51.28	791.8	61.26	-788.83	-769.90	279.55
65	13.7	28.6	NASA 65-79	0.00	63.72	-1.03	-2.91	25.96	792.2	81.28	-97.91	-132.15	-154.03
	13.8	28.7	NASA 65-79	0.00	53.69	-1.56	0.10	53.88	791.8	81.19	33.25	-12.68	-310.84
	13.9	28.8	NASA 65-79	0.00	43.04	-2.89	8.25	130.26	791.6	81.30	390.88	314.88	-742.57
	13.10	28.9	NASA 65-79	0.00	32.81	-5.25	39.30	416.53	791.8	81.22	1745.85	1592.62	-2356.34
	13.11	28.10	NASA 65-79	0.00	23.77	20.04	-198.84	-1775.06	793.0	81.14	-8695.01	-8132.34	*********
67	13.12	28.11	NASA 65-79	0.00	39.27	-2.71	13.17	178.71	791.8	81.27	604.35	528.20	-1019.14
68	13.13	28.12	NASA 65-79	0.00	33.56	-5.12	30.76	346.75	791.8	81.13	1379.73	1251.89	-1977.36
69	13.14	28.13	NASA 65-79	0.00	29.52	-9.13	74.64	787.86	791.8	81.22	3310.80	3079.71	-4494.58

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinates Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
70	13.15	28.14	NASA 65-79	0.00	43.63	-1.13	7.17	118.39	792.6	81.26	335.88	282.94	-676.93
71	13.16	28.15	NASA 65-79	0.00	49.84	-0.95	2.23	70.54	792.0	81.16	121.53	76.63	-403.32
72	13.17	28.16	NASA 65-79	0.00	38.53	-0.17	14.68	186.77	791.0	81.27	656.59	613.07	-1056.26
73	13.18	28.17	NASA 65-79	0.00	39.92	-0.44	12.19	173.70	790.6	81.23	550.77	512.42	-990.13
74	13.19	28.18	NASA 65-79	0.00	42.25	-0.14	8.88	155.95	793.0	81.17	407.38	373.52	-900.96
75	13.20	28.19	NASA 65-79	0.00	37.79	1.27	16.56	195.50	792.4	81.22	727.25	686.28	-1104.90
76	13.21	28.20	NASA 65-79	0.00	36.74	2.94	19.40	209.05	791.8	81.28	839.51	811.25	-1172.99
77	13.22	28.21	NASA 65-79	0.00	39.10	1.85	13.98	183.22	793.0	81.23	614.52	593.43	-1042.70
78	13.23	28.22	NASA 65-79	0.00	39.48	3.04	13.33	179.91	791.2	81.28	577.69	569.68	-1022.32
79	13.24	28.23	NASA 65-79	0.00	39.30	1.16	13.63	178.06	792.4	81.24	605.15	581.28	-1016.36
80	13.25	28.24	NASA 80-82	0.00	32.92	1.64	-0.55	71.00	791.8	91.19	-4.72	3.93	-404.69
81	13.26	28.25	NASA 80-82	0.00	33.68	2.42	-0.58	80.20	791.6	91.21	-8.12	4.37	-459.01
82	13.27	28.26	NASA 80-82	0.00	4.52	0.72	0.07	95.10	794.0	91.29	53.56	53.94	-541.98
80A	13.29	29.1	NASA 80A	0.00	101.96	-0.24	-6.00	10.49	792.8	31.23	-256.16	-260.20	-69.17
	13.30	29.2	NASA 80A	0.00	97.65	-0.23	-3.90	13.20	792.4	31.24	-171.42	-175.92	-82.97
	13.31	29.3	NASA 80A	0.00	93.33	-0.21	-1.35	16.18	791.6	31.24	-68.48	-73.51	-99.09
	13.32	29.4	NASA 80A	0.00	88.94	-0.46	1.75	20.00	791.2	31.24	58.01	53.30	-120.08
	13.33	29.5	NASA 80A	0.00	83.70	-0.56	6.26	24.96	793.0	31.24	242.44	237.33	-143.76
		29.6	NASA 80A	0.00	84.16	-0.41	5.92	24.49	792.6	31.24	227.43	221.82	-140.62
81A	13.34	29.7	NASA 81A	0.00	105.20	0.12	-7.25	8.31	792.6	21.09	-309.50	-322.86	-54.99
	13.35	29.8	NASA 81A	0.00	100.53	-0.20	-5.15	10.26	791.8	21.12	-223.14	-238.59	-64.85
	13.36	29.9	NASA 81A	0.00	93.79	-0.50	-1.71	13.33	791.4	21.14	-83.89	-100.34	-82.12
	13.37	29.10	NASA 81A	0.00	88.55	-0.76	1.84	16.68	792.6	21.16	60.05	42.41	-99.42
	13.38	29.11	NASA 81A	0.00	83.35	-1.07	6.41	21.04	793.2	21.17	244.88	225.62	-122.63
	13.39	29.12	NASA 81A	0.00	78.34	-1.35	12.17	26.45	792.0	21.20	477.73	456.07	-150.35
	13.40	29.13	NASA 81A	0.00	73.38	-1.84	19.84	33.69	792.2	21.23	789.00	764.65	-188.49
	13.41	29.14	NASA 81A	0.00	67.56	-2.84	32.25	44.42	792.2	21.27	1294.59	1266.61	-238.35
	13.42	29.15	NASA 81A	0.00	60.55	-3.44	55.81	64.93	792.2	21.27	2244.39	2204.26	-337.73
81B	13.43	29.16	NAS 81B-109	0.00	181.31	-2.96	-11.99	31.95	793.0	1.28	-484.92	-558.68	-193.92
	13.44	29.17	NAS 81B-109	0.00	177.03	-3.19	-7.45	35.10	792.0	1.29	-302.02	-379.04	-209.15
	13.45	29.18	NAS 81B-109	0.00	169.02	-4.26	2.30	42.71	792.0	1.31	93.60	11.81	-250.12
	13.46	29.19	NAS 81B-109	0.00	158.83	-5.27	16.81	52.70	791.4	1.36	680.03	604.08	-300.33
	13.47	29.20	NAS 81B-109	0.00	153.72	-6.37	25.87	59.35	792.2	1.40	1049.51	983.55	-334.46
	13.48	29.21	NAS 81B-109	0.00	149.98	-6.80	33.13	64.52	790.8	1.44	1342.36	1286.63	-359.30
87	13.49	29.22	NAS 81B-109	0.00	172.79	-3.48	-2.55	38.97	792.4	1.38	-104.47	-172.01	-231.75

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinate Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
88	13.50	29.23	NAS 81B-109	0.00	172.56	-4.45	-2.37	40.33	791.6	1.38	-90.75	-154.75	-241.18
89	13.51	29.24	NAS 81B-109	0.00	172.35	-5.21	-2.04	41.65	791.8	1.40	-72.56	-142.66	-251.46
90	13.52	29.25	NAS 81B-109	0.00	172.69	-2.58	-2.38	37.55	792.0	1.37	-102.72	-183.49	-218.44
91	13.53	29.26	NAS 81B-109	0.00	172.81	-1.22	-2.42	36.63	790.8	1.35	-113.37	-189.52	-209.41
92	13.54	29.27	NAS 81B-109	0.00	173.08	-2.97	-2.73	38.76	792.2	1.37	-114.63	-190.42	-229.15
93	13.55	29.28	NAS 81B-109	0.00	173.05	-2.64	-2.65	40.26	791.2	1.37	-118.31	-191.70	-237.98
94	13.56	29.29	NAS 81B-109	0.00	173.23	-4.32	-2.65	37.72	792.2	1.37	-99.97	-177.00	-223.85
		30.1	NAS 81B-109	0.00	273.72	-10.81	-18.86	87.20	791.6	1.47	-705.77	-872.53	-529.85
95	13.59	30.2	NAS 81B-109	0.00	269.65	-11.29	-16.35	87.14	792.4	1.51	-601.89	-770.10	-529.39
	13.60	30.3	NAS 81B-109	0.00	265.06	-12.28	-8.87	93.98	792.8	1.37	-295.77	-467.40	-563.58
	13.61	30.4	NAS 81B-109	0.00	267.99	-11.87	-12.66	89.75	792.8	1.34	-448.49	-617.91	-537.18
101	13.62	30.5	NAS 81B-109	0.00	270.41	-11.06	-16.44	85.44	791.8	1.35	-605.02	-773.79	-513.93
95A	13.63	30.6	NAS 81B-109	0.00	266.06	-11.96	-9.51	92.22	791.2	1.33	-323.62	-495.81	-551.95
101A	13.64	30.7	NAS 81B-109	0.00	271.00	-10.62	-17.02	85.77	790.2	1.34	-632.65	-802.55	-516.91
102	13.65	30.8	NAS 81B-109	0.00	271.11	-12.93	-16.83	88.34	791.8	1.28	-610.18	-785.46	-539.30
103	13.66	30.9	NAS 81B-109	0.00	270.08	-16.19	-16.20	90.51	791.8	1.39	-564.61	-759.96	-557.06
104	13.67	30.10	NAS 81B-109	0.00	270.23	-10.35	-16.18	82.24	791.8	1.28	-600.96	-794.61	-485.91
106	13.68	30.11	NAS 81B-109	0.00	269.99	-11.63	-16.01	84.95	793.0	1.43	-584.56	-771.02	-509.79
107	13.69	30.12	NAS 81B-109	0.00	270.11	-9.72	-16.13	87.65	792.4	1.25	-609.04	-788.25	-528.72
108	13.70	30.13	NAS 81B-109	0.00	270.20	-12.13	-16.39	82.24	792.4	1.32	-592.40	-775.90	-494.53
109	13.72	31.1	NAS 109-	0.00	178.01	-4.99	-8.16	34.91	794.0	1.22	-306.56	-368.09	-213.89
110	13.73	31.2	NAS 110	1.50	177.72	-5.79	-8.28	49.68	792.8	1.24	-297.61	-378.37	-304.93
111	13.74	31.3	NAS 111	3.01	178.70	-7.45	-9.09	63.67	792.0	1.27	-310.05	-424.43	-389.30
112	13.75	31.4	NAS 112	-1.50	177.57	-4.98	-7.77	19.48	792.4	1.21	-301.73	-368.45	-116.38
113	13.76	31.5	NAS 113	-3.00	176.30	-2.39	-6.85	5.66	792.4	1.20	-286.73	-325.00	-28.41
114	13.77	31.6	NAS 114	0.00	265.90	-8.77	-7.73	95.04	790.6	1.37	-274.41	-409.67	-569.69
115	13.78	31.7	NAS 115	0.99	266.34	-9.34	-8.30	118.48	792.0	1.44	-288.39	-434.59	-715.17
116	13.79	31.8	NAS 116	1.32	266.52	-10.61	-8.48	126.69	791.8	1.47	-285.73	-451.94	-765.23
117	13.80	31.9	NAS 117	-1.00	266.21	-7.23	-7.33	71.10	791.6	1.36	-273.84	-400.43	-423.91
118	13.81	31.10	NAS 118	-1.99	264.89	-3.70	-5.80	47.95	791.6	1.33	-240.49	-313.63	-280.77
128	13.82	31.11	NASA ?	0.00	266.24	-5.93	-7.88	95.90	791.4	1.43	-297.53	-397.65	-577.65
129	13.83	31.12	NASA ?	0.00	266.09	-7.45	-7.71	98.41	791.4	2.44	-277.80	-385.54	-594.68
130	13.84	31.13	NASA ?	0.00	266.04	-8.61	-7.42	101.03	791.4	3.05	-258.28	-373.75	-613.26
123	13.85												
122	13.86	31.14	NASA ?	0.00	248.08	-6.70	-3.07	86.18	790.8	1.32	-96.67	-222.02	-511.00

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinates Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
124	13.87	31.15	NASA ?	0.00	229.00	-5.40	-1.14	72.93	791.8	1.29	-24.96	-145.97	-431.07
122A	13.88	31.16	NASA ?	0.00	247.40	-5.99	-3.08	85.57	790.6	1.29	-100.14	-233.22	-507.81
122B	13.89												
124A	13.90	31.17	NASA ?	0.00	226.55	-5.27	8.97	86.59	793.0	1.37	381.54	285.73	-506.83
125	13.91	31.18	NASA ?	0.00	171.10	-0.99	-0.34	39.19	792.8	1.26	-12.72	-71.98	-227.03
126	13.92												
127	13.93	31.19	NASA ?	0.00	170.66	-2.45	-0.17	42.73	792.4	3.39	3.48	-60.85	-249.60
119	13.94	31.20	NASA ?	0.00	152.71	-0.64	1.28	32.87	791.4	1.42	50.89	1.63	-185.36
120	13.95	31.21	NASA ?	0.00	184.43	-0.29	-14.21	29.36	790.8	1.36	-574.35	-634.15	-174.51
121	13.96	31.22	NASA ?	0.00	117.76	1.47	25.61	41.85	792.6	1.31	1019.01	1024.98	-220.92
131	14.1	32.1	NASA 131	0.00	79.12	-1.08	7.92	21.29	791.0	21.24	332.60	326.83	-123.53
132	14.2												
133	14.3	32.2	NASA 132	2.49	78.22	-1.66	8.92	32.45	792.4	21.10	403.72	377.23	-185.89
133A	14.4	32.3	NASA 133A	5.00	77.86	-2.23	9.37	43.59	791.4	21.12	453.00	403.49	-249.04
134	14.5	32.4	NASA 134	-2.51	78.83	-1.08	8.45	11.94	801.8	21.15	332.07	321.84	-70.24
135	14.6	32.5	NASA 135	-5.00	82.38	0.27	5.01	1.55	792.2	21.12	164.03	169.89	-9.96
139	14.7	32.6	NASA 139	0.00	79.98	-0.98	7.34	19.92	792.0	21.09	308.14	291.09	-111.87
140	14.8	32.7	NASA 140	0.00	77.13	-0.87	9.95	25.15	793.8	24.07	412.16	387.50	-145.87
141	14.9	32.8	NASA 141	0.00	76.16	-1.61	11.20	29.19	791.6	27.16	469.30	439.48	-172.29
142	14.10	32.9	NASA 142	0.00	80.84	-0.70	6.26	17.48	793.6	17.98	261.22	232.23	-98.53
143	14.11	32.10	NASA 143	0.00	81.95	-0.25	5.22	15.44	792.6	15.10	215.99	186.22	-84.10
136	14.12	32.11	NASA 136	0.00	79.74	-1.00	7.27	20.22	789.8	21.09	304.38	275.61	-117.01
137	14.13	32.12	NASA 137	0.00	110.24	-0.79	-5.86	11.85	793.0	21.11	-231.93	-264.33	-75.76
138	14.14	32.13	NASA 138	0.00	47.29	-1.08	68.32	63.61	790.2	21.12	2791.81	2744.01	-349.86
		33.1	NASA HOVER	0.00	-544.72	0.01	-0.11	0.00	793.0	1.07	-4.43	-4.43	-0.06
		33.2	NASA HOVER	0.00	-604.11	0.01	-0.08	-0.01	791.4	3.26	-3.35	-3.35	-0.01
		33.3	NASA HOVER	0.00	-816.74	0.01	-0.21	-0.01	784.6	3.35	-8.72	-8.74	-0.06
	15.1	34.1	NASA HOVER	0.00	236.11	0.00	-0.03	0.00	795.8	5.09	-1.02	-1.01	-0.02
	15.2	34.2	NASA HOVER	0.00	-621.89	0.00	-0.07	-0.01	790.2	5.13	-2.70	-2.71	0.02
	15.3	34.3	NASA HOVER	0.00	-581.48	0.01	-0.12	-0.01	791.4	5.14	-4.75	-4.77	0.01
	15.4	34.4	NASA HOVER	0.00	-540.27	0.01	-0.22	-0.02	791.0	5.15	-8.76	-8.80	-0.03
	15.5	34.5	NASA HOVER	0.00	-641.41	0.01	-0.23	-0.02	791.2	5.15	-9.17	-9.21	-0.04
	15.6	34.6	NASA HOVER	0.00	-702.17	0.01	-0.27	-0.02	794.4	5.17	-10.88	-10.92	-0.06
	15.7	34.7	NASA HOVER	0.00	-813.58	0.01	-0.27	-0.02	792.0	5.19	-10.85	-10.89	-0.02
	15.8	34.8	NASA HOVER	0.00	-844.83	0.02	-0.32	-0.03	789.4	5.20	-13.00	-13.05	-0.03

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinate Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
	15.9	34.9	NASA HOVER	0.00	-905.51	0.02	-0.37	-0.03	791.6	5.22	-15.04	-15.11	-0.03
	15.10	34.10	NASA HOVER	0.00	-960.77	0.02	-0.43	-0.03	792.8	5.22	-17.50	-17.63	-0.05
	15.11	34.11	NASA HOVER	0.00	-1021.95	0.02	-0.49	-0.03	792.4	5.22	-19.75	-19.90	-0.08
	15.12	34.12	NASA HOVER	0.00	-1073.07	0.02	-0.54	-0.04	790.6	5.23	-21.88	-22.08	-0.09
	15.13	34.13	NASA HOVER	0.00	-1128.33	0.02	-0.60	-0.04	792.2	5.25	-24.13	-24.40	-0.16
	15.14	34.14	NASA HOVER	0.00	-1130.45	0.02	-0.65	-0.05	791.4	5.25	-26.36	-26.71	-0.51
	15.15	34.15	NASA HOVER	0.00	-992.93	0.03	-0.71	-0.06	791.0	5.27	-28.78	-29.29	-2.17
	15.16	34.16	NASA HOVER	0.00	209.41	-0.13	-0.76	0.34	791.0	5.29	-33.34	-30.25	64.51
	15.17	34.17	NASA HOVER	0.00	-1988.34	0.01	-0.86	-0.04	793.8	5.30	-34.86	-35.23	3.00
	15.18	34.18	NASA HOVER	0.00	-403.86	-0.01	-0.13	-0.02	793.2	5.22	-5.23	-5.42	0.03
	15.19	34.19	NASA HOVER	0.00	-383.42	0.00	-0.12	-0.02	791.6	5.22	-4.93	-5.07	0.00
	15.20	34.20	NASA HOVER	0.00	-324.93	-0.01	-0.11	-0.02	791.4	5.22	-4.39	-4.54	0.01
	15.21	34.21	NASA HOVER	0.00	-316.53	-0.01	-0.05	-0.01	793.2	5.21	-2.12	-2.21	0.04
	15.23	35.1	NASA HOVER	0.00	-16.23	0.08	-0.06	-0.09	792.2	5.24	-3.18	-3.50	0.78
	15.24	35.2	NASA HOVER	0.00	-154.40	0.01	-0.06	-0.02	792.4	5.25	-2.34	-2.38	0.11
	15.25	35.3	NASA HOVER	0.00	0.00	0.00	0.00	0.00	791.2	5.21	0.00	0.00	0.00
	15.26	35.4	NASA HOVER	0.00	0.00	0.00	0.00	0.00	792.0	5.24	0.00	0.00	0.00
	15.27	35.5	NASA HOVER	0.00	-827.36	0.00	-0.02	0.00	791.8	5.25	-0.86	-0.87	0.01
	15.28	35.6	NASA HOVER	0.00	-660.86	0.01	-0.05	-0.01	791.8	5.29	-2.16	-2.17	0.01
	15.29	35.7	NASA HOVER	0.00	-811.28	0.00	-0.05	-0.01	791.8	5.07	-2.15	-2.17	0.01
	15.30	35.8	NASA HOVER	0.00	-661.43	0.01	-0.11	-0.01	792.6	5.08	-4.42	-4.45	0.02
	15.31	35.9	NASA HOVER	0.00	-777.21	0.01	-0.11	-0.01	792.6	5.09	-4.41	-4.44	0.01
	15.32	35.10	NASA HOVER	0.00	-743.21	0.01	-0.16	-0.01	792.2	5.10	-6.57	-6.60	0.02
	15.33	35.11	NASA HOVER	0.00	-772.61	0.01	-0.20	-0.02	794.6	5.12	-8.07	-8.10	0.01
	15.34	35.12	NASA HOVER	0.00	-840.29	0.01	-0.21	-0.02	792.2	5.15	-8.71	-8.75	0.00
	15.35	35.13	NASA HOVER	0.00	-932.33	0.01	-0.22	-0.02	791.6	5.16	-9.02	-9.06	0.01
	15.36	35.14	NASA HOVER	0.00	-948.81	0.02	-0.27	-0.02	792.2	5.17	-10.85	-10.89	0.00
	15.37	35.15	NASA HOVER	0.00	-939.14	0.02	-0.33	-0.03	791.6	5.18	-13.32	-13.39	-0.02
	15.38	35.16	NASA HOVER	0.00	-958.58	0.02	-0.38	-0.03	792.0	5.20	-15.33	-15.50	-0.03
	15.39	35.17	NASA HOVER	0.00	-995.17	0.02	-0.38	-0.03	791.6	5.21	-15.32	-15.49	-0.04
	15.40	35.18	NASA HOVER	0.00	-1032.90	0.01	-0.38	-0.03	792.2	5.22	-15.41	-15.57	-0.02
	15.41	35.19	NASA HOVER	0.00	-1077.04	0.01	-0.38	-0.03	792.2	5.22	-15.41	-15.57	-0.02
	15.42	35.20	NASA HOVER	0.00	-1040.16	0.02	-0.43	-0.04	791.0	5.23	-17.45	-17.64	-0.02
	15.43	35.21	NASA HOVER	0.00	-1082.49	0.02	-0.43	-0.04	791.4	5.23	-17.45	-17.65	-0.02
	15.44	35.22	NASA HOVER	0.00	-1128.45	0.02	-0.43	-0.04	792.8	5.24	-17.45	-17.65	0.01

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinates Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
	15.45	35.23	NASA HOVER	0.00	-1150.68	0.02	-0.44	-0.04	792.2	5.23	-17.77	-17.98	-0.01
	15.46	35.24	NASA HOVER	0.00	-1122.72	0.02	-0.49	-0.04	791.2	5.18	-19.70	-19.94	-0.01
	15.47	35.25	NASA HOVER	0.00	-1158.16	0.02	-0.49	-0.04	791.2	5.26	-19.69	-19.95	0.00
	15.48	35.26	NASA HOVER	0.00	-1164.25	0.02	-0.54	-0.05	792.0	5.34	-21.83	-22.13	-0.02
	15.49	35.27	NASA HOVER	0.00	-1151.94	0.02	-0.59	-0.05	799.4	5.23	-23.97	-24.32	-0.26
		35.28	NASA HOVER	0.00	-1147.37	0.02	-0.58	-0.05	791.6	5.12	-23.65	-24.00	-0.19
	15.50	35.29	NASA HOVER	0.00	-1170.01	0.02	-0.59	-0.05	791.8	5.15	-23.96	-24.34	-0.36
	15.51	35.30	NASA HOVER	0.00	-1187.56	0.02	-0.60	-0.05	792.2	5.18	-24.37	-24.80	-0.51
	15.54	36.1	NAS DWNLOAD	0.00	-955.65	0.00	-0.39	-0.03	791.0	5.15	-15.80	-16.20	-0.04
		36.2	NAS DWNLOAD	0.00	-1050.22	0.01	-0.34	-0.03	790.4	5.21	-13.78	-14.06	0.00
	15.55	37.1	NAS DWNLOAD	0.00	-61.60	-0.27	-0.83	-1.11	790.6	5.54	-23.66	-41.15	-153.60
	15.57	38.1	NAS DWNLOAD	0.00	-1930.88	0.00	-0.02	0.01	792.2	91.37	-0.71	-0.70	-0.04
	15.58	38.2	NAS DWNLOAD	0.00	-2509.90	0.00	-0.01	0.00	792.6	91.41	-0.47	-0.46	-0.02
	15.59	38.3	NAS DWNLOAD	0.00	-3215.10	0.00	-0.01	0.00	792.4	91.18	-0.35	-0.34	-0.01
	15.60	38.4	NAS DWNLOAD	0.00	0.00	0.00	0.00	0.00	791.8	91.26	0.00	0.00	0.00
	15.61	38.5	NAS DWNLOAD	0.00	-1480.37	0.00	-0.05	0.01	793.0	91.30	-2.15	-2.13	-0.06
	15.62	38.6	NAS DWNLOAD	0.00	-1141.66	-0.01	-0.09	0.01	792.6	91.35	-3.94	-3.90	-0.10
	15.63	38.7	NAS DWNLOAD	0.00	-1132.87	-0.01	-0.11	0.01	791.6	91.17	-4.45	-4.46	-0.10
	15.64	38.8	NAS DWNLOAD	0.00	-864.69	-0.01	-0.21	0.03	792.4	91.24	-8.74	-8.84	-0.23
	15.65	38.9	NAS DWNLOAD	0.00	-917.45	-0.02	-0.21	0.03	791.2	91.25	-8.75	-8.97	-0.21
	15.66	38.10	NAS DWNLOAD	0.00	-1067.15	-0.02	-0.27	0.06	791.0	91.31	-10.86	-11.15	-0.42
	15.67	38.11	NAS DWNLOAD	0.00	-1174.54	-0.03	-0.27	0.06	792.0	91.23	-11.02	-11.39	-0.43
	15.68	38.12	NAS DWNLOAD	0.00	-1189.79	-0.03	-0.32	0.08	790.8	91.30	-13.09	-13.56	-0.55
	15.69	38.13	NAS DWNLOAD	0.00	-1173.99	-0.03	-0.38	0.10	792.8	91.15	-15.28	-15.94	-0.63
	15.70	38.14	NAS DWNLOAD	0.00	-1132.64	-0.04	-0.43	0.12	792.2	91.22	-17.31	-18.25	-0.71
	15.71	38.15	NAS DWNLOAD	0.00	-1091.51	-0.04	-0.48	0.13	791.8	91.31	-19.29	-20.57	-0.80
	15.72	38.16	NAS DWNLOAD	0.00	-1053.00	-0.04	-0.54	0.15	791.0	91.39	-21.25	-22.87	-0.90
	15.73	38.17	NAS DWNLOAD	0.00	-1034.38	-0.05	-0.59	0.17	792.4	91.14	-23.17	-25.20	-0.99
	15.74	38.18	NAS DWNLOAD	0.00	-1019.03	-0.05	-0.65	0.18	792.2	91.27	-25.42	-27.85	-1.06
	15.75	38.19	NAS DWNLOAD	0.00	-993.95	-0.05	-0.72	0.20	791.2	91.22	-27.99	-30.79	-1.16
	15.76	38.20	NAS DWNLOAD	0.00	-1012.27	-0.05	-0.42	0.16	791.8	91.13	-16.91	-18.09	-0.98
	15.77	38.21	NAS DWNLOAD	0.00	-2029.80	-0.01	-0.04	0.01	791.6	91.19	-1.60	-1.63	-0.10
	15.78	38.22	NAS DWNLOAD	0.00	-1129.31	-0.03	-0.31	0.09	792.4	91.26	-12.56	-13.13	-0.57
	15.80	39.1	NAS DWNLOAD	0.00	0.00	0.00	0.00	0.00	792.6	91.12	0.00	0.00	0.00
	15.81	39.2	NAS DWNLOAD	0.00	-845.21	0.00	-0.04	0.00	791.8	91.18	-1.42	-1.46	0.00

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinate Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
	15.82	39.3	NAS DWNLOAD	0.00	-661.06	0.01	-0.14	0.00	792.0	91.18	-5.55	-5.71	-0.02
	15.83	39.4	NAS DWNLOAD	0.00	-754.27	0.01	-0.21	0.00	791.8	91.22	-8.69	-8.90	-0.04
	15.84	39.5	NAS DWNLOAD	0.00	-908.35	0.02	-0.32	0.01	792.6	91.23	-13.02	-13.29	-0.07
	15.85	39.6	NAS DWNLOAD	0.00	-915.45	0.03	-0.47	0.01	792.4	91.34	-19.14	-19.46	-0.14
	15.86	39.7	NAS DWNLOAD	0.00	-1058.05	0.03	-0.55	0.01	790.8	91.21	-22.22	-22.69	-0.17
	15.87	39.8	NAS DWNLOAD	0.00	-1176.43	0.01	-0.65	0.02	790.2	91.30	-26.03	-26.78	-0.21
	15.88	39.9	NAS DWNLOAD	0.00	-1289.00	0.02	-0.75	0.02	791.8	91.20	-30.36	-31.21	-0.25
	15.89	39.10	NAS DWNLOAD	0.00	-956.94	0.02	-0.39	0.01	791.6	91.23	-15.70	-16.08	-0.06
	15.91	40.1	NAS DWNLOAD	0.00	-1207.52	0.01	-0.64	0.02	794.6	91.55	-25.89	-26.63	-0.19
	15.92	40.2	NAS DWNLOAD	0.00	-1283.04	0.02	-0.57	0.01	794.2	91.64	-22.99	-23.61	-0.20
	16.1	41.1	NAS DWNLOAD	0.00	-608.84	0.01	-0.20	0.00	792.4	91.20	-8.05	-8.29	-0.03
	16.2	42.1	NAS DWNLOAD	0.00	-659.04	0.01	-0.16	0.00	793.8	91.21	-6.51	-6.71	-0.04
	16.3	42.2	NAS DWNLOAD	0.00	-622.71	0.01	-0.21	0.00	791.8	91.31	-8.68	-8.94	-0.05
	16.4	42.3	NAS DWNLOAD	0.00	-632.22	0.01	-0.21	0.01	791.6	91.33	-8.67	-8.95	-0.07
	16.5	42.4	NAS DWNLOAD	0.00	-625.60	0.01	-0.21	0.00	791.6	91.34	-8.67	-8.91	-0.05
	16.6	42.5	NAS DWNLOAD	0.00	-765.93	0.01	-0.25	0.00	792.8	91.37	-10.08	-10.33	-0.05
	16.7	42.6	NAS DWNLOAD	0.00	-852.67	0.01	-0.29	0.00	792.6	91.39	-11.81	-12.10	-0.07
	16.8	42.7	NAS DWNLOAD	0.00	-889.56	0.01	-0.38	0.00	792.6	91.43	-15.26	-15.67	-0.09
	16.9	42.8	NAS DWNLOAD	0.00	-982.51	0.02	-0.43	0.01	792.0	91.14	-17.42	-17.88	-0.11
	16.10	42.9	NAS DWNLOAD	0.00	-1040.66	0.02	-0.50	0.01	792.8	91.25	-20.11	-20.66	-0.12
	16.11	42.10	NAS DWNLOAD	0.00	-1066.27	0.02	-0.60	0.01	792.4	91.35	-24.11	-24.82	-0.14
	16.12	42.11	NAS DWNLOAD	0.00	-1100.13	0.01	-0.61	0.01	791.2	91.41	-24.74	-25.49	-0.17
	16.13	42.12	NAS DWNLOAD	0.00	-634.07	0.01	-0.21	0.00	792.8	91.05	-8.67	-8.90	-0.06
	16.14	42.13	NAS DWNLOAD	0.00	-663.37	0.02	-0.16	0.00	793.0	91.17	-6.65	-6.75	-0.03
	16.15	42.14	NAS DWNLOAD	0.00	-594.20	0.02	-0.21	0.00	792.6	91.19	-8.49	-8.68	-0.07
	16.16	42.15	NAS DWNLOAD	0.00	-692.22	0.01	-0.16	0.00	792.2	91.20	-6.51	-6.65	-0.03
	16.17	42.16	NAS DWNLOAD	0.00	-689.76	0.02	-0.21	0.00	790.6	91.21	-8.70	-8.86	-0.04
	16.18	42.17	NAS DWNLOAD	0.00	-793.35	0.02	-0.21	0.00	793.4	91.22	-8.69	-8.85	-0.03
	16.19	42.18	NAS DWNLOAD	0.00	-826.98	0.02	-0.24	0.00	791.4	91.24	-9.89	-10.06	-0.04
	16.20	42.19	NAS DWNLOAD	0.00	-869.73	0.02	-0.27	0.00	792.6	91.26	-10.86	-11.06	-0.05
	16.21	42.20	NAS DWNLOAD	0.00	-852.83	0.02	-0.32	0.00	791.6	91.27	-13.03	-13.28	-0.05
	16.22	42.21	NAS DWNLOAD	0.00	-900.62	0.02	-0.32	0.00	792.6	91.28	-13.03	-13.31	-0.05
	16.23	42.22	NAS DWNLOAD	0.00	-846.21	0.02	-0.38	0.01	791.6	91.31	-15.32	-15.72	-0.11
	16.24	42.23	NAS DWNLOAD	0.00	-854.97	0.02	-0.38	0.01	790.8	91.36	-15.31	-15.75	-0.11
	16.25	42.24	NAS DWNLOAD	0.00	-878.83	0.02	-0.36	0.00	794.2	91.45	-14.64	-15.09	-0.08

Witness Collected Data

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	All values corrected to model balance wind axis coordinates Test Condition	Fuselage Angle of Attack deg.	Tunnel Velocity ft./sec.	Rotor Side Force (-tnl lift) lb.	Rotor Thrust (-tnl drag) lb.	Rotor Lift (tnl sf) lb.	Rotor RPM 1/min.	Nacelle Tilt deg.	Rotor Yaw Moment in.-lb.	Rotor Roll Moment in.-lb.	Rotor Pitch Moment in.-lb.
	16.26	42.25	NAS DWNLOAD	0.00	-894.03	0.02	-0.35	0.00	791.6	91.48	-13.99	-14.42	-0.07
49	12.67												
64	12.91												
82	13.28												
94	13.57												
94	13.58												
108	13.71												
	13.97												
138	14.17												
	15.79												
	15.90												
	15.93												

APPENDIX Q

Calculated Parameters

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= 4.1 ΩR= 340 (ref. rad., tip speed)	CD*	CL*/sigma* sigma*= 0.0856	CD*/sigma*	CT* (see CL*, CD*)	CT*/sigma*
		24.1									
		24.2									
2	12.2	25.1	-1.44	3.30	0.8297	0.0006	0.0001	0.0066	0.0007	0.0005	0.0053
	12.3	25.2	-1.89	4.91	0.8341	0.0021	-0.0009	0.0251	-0.0106	0.0023	0.0270
	12.4		-1.89	6.10	0.8335	0.0032	-0.0016	0.0375	-0.0185	0.0036	0.0417
8	12.5	25.3	-1.69	4.41	0.8359	0.0016	-0.0006	0.0191	-0.0067	0.0017	0.0200
9	12.6	25.4	-1.65	5.57	0.8356	0.0026	-0.0011	0.0303	-0.0131	0.0028	0.0328
10	12.7	25.5	-1.75	6.85	0.8359	0.0036	-0.0017	0.0426	-0.0196	0.0040	0.0467
11	12.8	25.6	-1.73	3.15	0.8322	0.0006	0.0000	0.0073	0.0001	0.0005	0.0063
12	12.9	25.7	-1.76	1.83	0.8291	-0.0004	0.0007	-0.0050	0.0077	-0.0007	-0.0082
18	12.10	28.8	-1.72	4.39	0.8384	0.0015	-0.0005	0.0178	-0.0061	0.0016	0.0185
19	12.11	25.9	-1.35	4.84	0.8368	0.0018	-0.0006	0.0212	-0.0074	0.0019	0.0221
20	12.12	25.10	-1.07	5.61	0.8353	0.0022	-0.0008	0.0263	-0.0096	0.0024	0.0275
21	12.13	25.11	-1.97	3.67	0.8254	0.0013	-0.0005	0.0153	-0.0053	0.0014	0.0159
22	12.14	25.12	-2.27	2.90	0.8230	0.0011	-0.0003	0.0124	-0.0038	0.0011	0.0126
26	12.15	25.13	-1.71	4.47	0.8251	0.0017	-0.0006	0.0202	-0.0075	0.0018	0.0213
27	12.16	25.14	-2.54	4.65	0.8199	0.0019	-0.0007	0.0217	-0.0082	0.0020	0.0229
28	12.17	25.15	-0.87	4.26	0.8267	0.0015	-0.0006	0.0180	-0.0064	0.0016	0.0188
1	12.18	25.16	-1.02	1.40	0.8304	0.0004	0.0002	0.0050	0.0023	0.0004	0.0045
	12.19	25.17	-1.46	2.61	0.8279	0.0023	-0.0002	0.0271	-0.0019	0.0023	0.0270
	12.20	25.18	-1.82	4.21	0.8331	0.0042	-0.0005	0.0494	-0.0060	0.0043	0.0497
	12.21	25.19	-1.90	4.23	0.8332	0.0042	-0.0005	0.0488	-0.0060	0.0042	0.0491
	12.22	25.20	-2.31	5.85	0.8380	0.0059	-0.0009	0.0688	-0.0100	0.0060	0.0695
	12.23	25.21	-3.26	7.83	0.8359	0.0074	-0.0012	0.0870	-0.0141	0.0075	0.0881
3	12.24	25.22	-2.67	5.31	0.8242	0.0052	-0.0008	0.0613	-0.0089	0.0053	0.0619
4	12.25	25.23	-2.51	6.58	0.8242	0.0063	-0.0009	0.0740	-0.0105	0.0064	0.0746
5	12.26	25.24	-2.42	8.12	0.8260	0.0076	-0.0010	0.0882	-0.0115	0.0076	0.0889
6	12.27	25.25	-2.83	3.88	0.8193	0.0041	-0.0006	0.0477	-0.0072	0.0041	0.0482
7	12.28	25.26	-2.90	2.63	0.8089	0.0030	-0.0004	0.0356	-0.0050	0.0031	0.0359
13	12.29	25.27	-2.70	5.29	0.8153	0.0053	-0.0008	0.0618	-0.0092	0.0054	0.0625
14	12.30	25.28	-2.43	5.97	0.8103	0.0057	-0.0008	0.0670	-0.0088	0.0058	0.0675
15	12.31		-2.26	6.87	0.8097	0.0062	-0.0007	0.0721	-0.0080	0.0062	0.0725
16	12.32	25.29	-3.20	4.52	0.8097	0.0050	-0.0008	0.0580	-0.0098	0.0050	0.0589

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
17	12.33	25.30	-3.34	3.52	0.8088	0.0046	-0.0008	0.0538	-0.0098	0.0047	0.0546
23	12.34	25.31	-2.71	5.29	0.8140	0.0053	-0.0008	0.0614	-0.0092	0.0053	0.0621
24	12.35	25.32	-3.52	5.54	0.8214	0.0054	-0.0008	0.0627	-0.0090	0.0054	0.0633
25	12.36	25.33	-1.79	5.14	0.8248	0.0053	-0.0008	0.0616	-0.0092	0.0053	0.0623
30	12.37	25.34	-1.82	4.12	0.9435	0.0003	0.0003	0.0036	0.0035	0.0001	0.0014
	12.38	25.35	-2.01	4.85	0.9498	0.0010	-0.0001	0.0122	-0.0017	0.0010	0.0114
	12.39	25.36	-2.17	5.73	0.9488	0.0018	-0.0006	0.0210	-0.0071	0.0019	0.0217
	12.40	25.37	-2.07	6.23	0.9465	0.0022	-0.0008	0.0254	-0.0099	0.0023	0.0270
35	12.42	26.1	-2.06	2.98	0.9765	0.0002	0.0003	0.0018	0.0038	0.0000	0.0004
	12.43	26.2	-2.57	4.24	0.9743	0.0012	-0.0001	0.0145	-0.0010	0.0012	0.0140
	12.44	26.3	-3.11	5.54	0.9768	0.0023	-0.0005	0.0264	-0.0054	0.0023	0.0267
	12.45	26.4	-3.68	6.92	0.9659	0.0034	-0.0009	0.0399	-0.0107	0.0035	0.0412
	12.46	26.5	-4.19	8.43	0.9769	0.0044	-0.0013	0.0509	-0.0151	0.0045	0.0530
		26.6									
36	12.47	26.7	-1.77	4.21	0.9714	0.0002	0.0002	0.0025	0.0018	0.0001	0.0013
	12.48	26.8	-2.22	5.59	0.9740	0.0013	-0.0005	0.0147	-0.0054	0.0013	0.0154
	12.49	26.9									
	12.50	26.10	-2.63	6.90	0.9743	0.0022	-0.0011	0.0262	-0.0125	0.0025	0.0289
	12.51	26.11	-2.96	8.26	0.9746	0.0032	-0.0017	0.0372	-0.0194	0.0036	0.0420
	12.52	26.12	-3.07	9.39	0.9765	0.0039	-0.0021	0.0457	-0.0244	0.0044	0.0518
37	12.53	26.13	-2.72	7.58	0.9707	0.0027	-0.0014	0.0318	-0.0161	0.0030	0.0356
38	12.54	26.14	-2.75	8.64	0.9710	0.0033	-0.0017	0.0390	-0.0196	0.0037	0.0436
39	12.55	26.15	-2.69	9.88	0.9708	0.0040	-0.0020	0.0470	-0.0234	0.0045	0.0524
40	12.56	26.16	-2.71	6.34	0.9736	0.0021	-0.0010	0.0242	-0.0118	0.0023	0.0268
41	12.57	26.17	-2.70	5.02	0.9736	0.0014	-0.0006	0.0158	-0.0070	0.0015	0.0173
42	12.58	26.18									
	12.59	26.19									
	12.60	26.20	-2.72	7.60	0.9772	0.0027	-0.0013	0.0310	-0.0154	0.0030	0.0346
43	12.61	26.21	-2.33	8.36	0.9750	0.0029	-0.0014	0.0344	-0.0162	0.0032	0.0379
44	12.62	26.22	-2.13	9.25	0.9750	0.0031	-0.0014	0.0368	-0.0169	0.0035	0.0403
45	12.63	26.23	-3.01	6.76	0.9699	0.0024	-0.0013	0.0285	-0.0151	0.0028	0.0322
47	12.64	26.24	-2.73	7.56	0.9732	0.0026	-0.0013	0.0308	-0.0154	0.0029	0.0344
48	12.65	26.25	-3.51	7.62	0.9780	0.0027	-0.0013	0.0313	-0.0154	0.0030	0.0349

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= 4.1 ΩR= 340 (ref. rad., tip speed)	CD*	CL*/sigma* sigma*= 0.0856	CD*/sigma*	CT* (see CL*, CD*)	CT*/sigma*
49	12.66	26.26	-1.93	7.35	0.9751	0.0025	-0.0013	0.0296	-0.0150	0.0028	0.0332
51	12.68	27.1	-1.45	1.83	0.5567	0.0006	-0.0002	0.0065	-0.0028	0.0006	0.0070
	12.69	27.2	-1.83	2.66	0.5670	0.0015	-0.0008	0.0180	-0.0095	0.0017	0.0203
	12.70	27.3	-2.23	3.60	0.5676	0.0027	-0.0015	0.0310	-0.0171	0.0030	0.0354
	12.71	27.4	-2.60	4.41	0.5528	0.0037	-0.0020	0.0428	-0.0239	0.0042	0.0490
	12.72	27.5	-2.98	5.35	0.5546	0.0047	-0.0027	0.0553	-0.0311	0.0054	0.0634
	12.73	27.6	-3.15	6.22	0.5591	0.0056	-0.0032	0.0660	-0.0371	0.0065	0.0757
	12.74	27.7	-3.72	7.25	0.5510	0.0066	-0.0037	0.0766	-0.0435	0.0075	0.0881
	12.75	27.8	-4.00	7.95	0.5480	0.0071	-0.0041	0.0834	-0.0474	0.0082	0.0959
50	12.76	27.9	-4.16	5.26	0.5687	0.0054	-0.0009	0.0633	-0.0105	0.0055	0.0642
	12.77	27.10	-4.70	6.23	0.5582	0.0064	-0.0011	0.0752	-0.0124	0.0065	0.0763
	12.78	27.11	-5.11	7.05	0.5552	0.0071	-0.0012	0.0834	-0.0136	0.0072	0.0845
52	12.79	27.12	-4.58	5.94	0.5546	0.0062	-0.0010	0.0724	-0.0119	0.0063	0.0734
53	12.80	27.13	-4.55	6.47	0.5558	0.0067	-0.0010	0.0787	-0.0121	0.0068	0.0797
54	12.81	27.14	-4.50	7.55	0.5567	0.0073	-0.0010	0.0854	-0.0122	0.0074	0.0862
		27.15									
55	12.82	27.16	-4.59	5.11	0.5572	0.0056	-0.0010	0.0655	-0.0115	0.0057	0.0665
57	12.83	27.17	-4.57	5.99	0.5550	0.0062	-0.0010	0.0725	-0.0118	0.0063	0.0735
58	12.84	27.18	-4.21	6.24	0.5556	0.0063	-0.0009	0.0740	-0.0106	0.0064	0.0747
		27.19									
59	12.85	27.20	-3.97	7.07	0.5570	0.0065	-0.0008	0.0761	-0.0094	0.0066	0.0767
60	12.86	27.21	-4.82	5.38	0.5602	0.0060	-0.0011	0.0705	-0.0128	0.0061	0.0717
62	12.87	27.22									
	12.88	27.23	-4.59	6.00	0.5585	0.0063	-0.0010	0.0733	-0.0118	0.0064	0.0743
63	12.89	27.24	-5.44	5.95	0.5615	0.0063	-0.0010	0.0736	-0.0117	0.0064	0.0745
64	12.90	27.25	-3.72	5.93	0.5613	0.0062	-0.0010	0.0722	-0.0117	0.0063	0.0732
66	13.1	28.1	0.00	0.00	0.4845	0.0000	-0.0002	-0.0003	-0.0022	0.0001	0.0009
	13.3	28.2	-1.47	1.88	0.4831	0.0020	-0.0010	0.0237	-0.0121	0.0023	0.0266
	13.4	28.3	-1.66	2.82	0.4783	0.0038	-0.0021	0.0442	-0.0241	0.0043	0.0503
	13.5	28.4	-1.97	3.83	0.4736	0.0054	-0.0030	0.0630	-0.0353	0.0062	0.0723
	13.6	28.5	-2.04	4.18	0.4720	0.0059	-0.0033	0.0683	-0.0388	0.0067	0.0786
65	13.7	28.6	-1.91	0.97	0.4689	0.0020	-0.0003	0.0238	-0.0032	0.0021	0.0240
	13.8	28.7	-2.25	1.60	0.4689	0.0036	-0.0005	0.0419	-0.0064	0.0036	0.0424

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= 4.1 ΩR= 340 (ref. rad., tip speed)	CD*	CL*/sigma* sigma*= 0.0856	CD*/sigma*	CT* (see CL*, CD*)	CT*/sigma*
	13.9	28.8	-2.67	2.64	0.4790	0.0055	-0.0009	0.0645	-0.0102	0.0056	0.0654
	13.10	28.9	-3.12	3.67	0.4819	0.0073	-0.0012	0.0851	-0.0139	0.0074	0.0863
	13.11	28.10	-3.60	4.49	0.4768	0.0085	-0.0014	0.0991	-0.0165	0.0086	0.1004
67	13.12	28.11	-3.18	3.08	0.4755	0.0061	-0.0010	0.0717	-0.0119	0.0062	0.0727
68	13.13	28.12	-3.13	3.71	0.4742	0.0071	-0.0011	0.0829	-0.0134	0.0072	0.0840
69	13.14	28.13	-3.10	4.38	0.4744	0.0081	-0.0012	0.0941	-0.0143	0.0081	0.0952
70	13.15	28.14	-3.15	2.39	0.4737	0.0053	-0.0009	0.0617	-0.0106	0.0054	0.0626
71	13.16	28.15	-3.04	1.40	0.4735	0.0041	-0.0007	0.0477	-0.0086	0.0041	0.0484
72	13.17	28.16	-2.99	3.01	0.4753	0.0061	-0.0010	0.0711	-0.0116	0.0062	0.0720
73	13.18	28.17	-2.58	3.41	0.4782	0.0062	-0.0009	0.0724	-0.0106	0.0063	0.0732
74	13.19	28.18	-2.27	4.03	0.4757	0.0065	-0.0008	0.0764	-0.0098	0.0066	0.0770
75	13.20	28.19	-3.46	2.42	0.4762	0.0059	-0.0011	0.0685	-0.0125	0.0060	0.0696
76	13.21	28.20	-3.79	1.80	0.4775	0.0057	-0.0011	0.0667	-0.0132	0.0058	0.0680
77	13.22	28.21	-3.10	3.05	0.4784	0.0061	-0.0010	0.0710	-0.0117	0.0062	0.0720
78	13.23	28.22	-3.85	3.14	0.4788	0.0062	-0.0010	0.0719	-0.0115	0.0062	0.0728
79	13.24	28.23	-2.35	2.71	0.4774	0.0060	-0.0010	0.0704	-0.0119	0.0061	0.0714
80	13.25	28.24	-4.56	1.08	0.0000	0.0068	0.0001	0.0800	0.0010	0.0068	0.0800
81	13.26	28.25	-4.67	1.31	0.0000	0.0077	0.0001	0.0905	0.0011	0.0077	0.0905
82	13.27	28.26	-0.74	0.13	0.0000	0.0056	0.0001	0.0654	0.0008	0.0056	0.0654
80A	13.29	29.1	-2.76	6.26	1.1892	0.0004	-0.0002	0.0048	-0.0026	0.0004	0.0047
	13.30	29.2	-3.01	6.68	1.1914	0.0005	-0.0005	0.0063	-0.0055	0.0007	0.0079
	13.31	29.3	-3.28	7.11	1.1969	0.0007	-0.0007	0.0080	-0.0086	0.0010	0.0115
	13.32	29.4	-3.44	7.62	1.1964	0.0008	-0.0010	0.0098	-0.0121	0.0013	0.0154
	13.33	29.5	-3.62	8.04	1.1987	0.0010	-0.0013	0.0113	-0.0148	0.0016	0.0185
		29.6									
81A	13.34	29.7	-1.56	4.55	1.1964	0.0001	-0.0001	0.0014	-0.0013	0.0001	0.0017
	13.35	29.8	-1.77	4.81	1.1969	0.0002	-0.0004	0.0024	-0.0045	0.0004	0.0050
	13.36	29.9	-1.88	5.16	1.1909	0.0003	-0.0007	0.0039	-0.0081	0.0008	0.0089
	13.37	29.10	-2.03	5.48	1.1932	0.0005	-0.0010	0.0053	-0.0121	0.0011	0.0132
	13.38	29.11	-2.16	5.78	1.1920	0.0006	-0.0014	0.0066	-0.0158	0.0015	0.0171
	13.39	29.12	-2.35	6.12	1.1969	0.0007	-0.0016	0.0077	-0.0192	0.0018	0.0207
	13.40	29.13	-2.43	6.44	1.1987	0.0008	-0.0019	0.0089	-0.0225	0.0021	0.0242
	13.41	29.14	-2.55	6.77	1.1987	0.0009	-0.0023	0.0101	-0.0263	0.0024	0.0282

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
	13.42	29.15	-2.81	7.16	1.1918	0.0010	-0.0026	0.0112	-0.0306	0.0028	0.0325
81B	13.43	29.16	-0.63	0.24	2.2284	-0.0002	-0.0002	-0.0022	-0.0027	0.0002	0.0027
	13.44	29.17	-0.81	0.32	2.2346	-0.0002	-0.0007	-0.0019	-0.0083	0.0007	0.0083
	13.45	29.18	-0.86	0.38	2.2387	-0.0001	-0.0017	-0.0014	-0.0194	0.0017	0.0194
	13.46	29.19	-0.97	0.56	2.2376	-0.0001	-0.0028	-0.0013	-0.0324	0.0028	0.0324
	13.47	29.20	-0.95	0.58	2.2373	-0.0001	-0.0033	-0.0008	-0.0388	0.0033	0.0388
	13.48	29.21	-1.04	0.71	2.2407	-0.0001	-0.0037	-0.0009	-0.0433	0.0037	0.0433
87	13.49	29.22	-0.84	0.44	2.2357	-0.0001	-0.0011	-0.0017	-0.0123	0.0011	0.0123
88	13.50	29.23	-0.38	1.03	2.2390	0.0001	-0.0011	0.0007	-0.0124	0.0011	0.0125
89	13.51	29.24	0.02	2.36	2.2407	0.0002	-0.0011	0.0025	-0.0128	0.0011	0.0129
90	13.52	29.25	-1.24	-0.58	2.2390	-0.0003	-0.0011	-0.0036	-0.0123	0.0010	0.0122
91	13.53	29.26	-1.67	-2.04	2.2404	-0.0004	-0.0011	-0.0050	-0.0124	0.0011	0.0123
92	13.54	29.27	-0.88	0.48	2.2387	-0.0002	-0.0010	-0.0020	-0.0114	0.0010	0.0114
93	13.55	29.28	-1.61	0.08	2.2404	0.0000	-0.0010	-0.0003	-0.0114	0.0010	0.0114
94	13.56	29.29	-0.18	0.25	2.2415	-0.0003	-0.0010	-0.0033	-0.0116	0.0010	0.0116
		30.1									
95	13.59	30.2	-1.11	0.59	3.4029	0.0000	-0.0005	-0.0005	-0.0063	0.0005	0.0063
	13.60	30.3	-1.12	0.47	3.4068	0.0000	-0.0012	-0.0005	-0.0145	0.0012	0.0146
	13.61	30.4	-1.11	0.42	3.4096	-0.0001	-0.0008	-0.0010	-0.0090	0.0008	0.0089
101	13.62	30.5	-1.09	0.45	3.4152	-0.0001	-0.0003	-0.0009	-0.0029	0.0002	0.0029
95A	13.63	30.6	-1.12	0.44	3.4112	-0.0001	-0.0010	-0.0009	-0.0116	0.0010	0.0117
101A	13.64	30.7	-1.09	0.30	3.4232	-0.0002	-0.0002	-0.0018	-0.0022	0.0002	0.0022
102	13.65	30.8	-0.55	1.80	3.4196	0.0002	-0.0002	0.0025	-0.0018	0.0002	0.0018
103	13.66	30.9	-0.16	4.21	3.4098	0.0005	-0.0002	0.0063	-0.0024	0.0002	0.0024
104	13.67	30.10	-1.47	-1.48	3.4230	-0.0005	-0.0002	-0.0058	-0.0020	0.0002	0.0020
106	13.68	30.11	-1.12	0.48	3.4065	-0.0001	-0.0001	-0.0008	-0.0017	0.0001	0.0016
107	13.69	30.12	-1.82	0.31	3.4112	0.0002	-0.0002	0.0023	-0.0019	0.0002	0.0019
108	13.70	30.13	-0.41	0.20	3.4100	-0.0004	-0.0002	-0.0049	-0.0022	0.0002	0.0022
109	13.72	31.1	-0.67	0.36	2.2323	-0.0002	-0.0010	-0.0019	-0.0112	0.0010	0.0112
110	13.73	31.2	-0.68	2.06	2.2298	0.0001	-0.0009	0.0012	-0.0106	0.0009	0.0106
111	13.74	31.3	-0.68	4.25	2.2363	0.0003	-0.0008	0.0036	-0.0098	0.0009	0.0100
112	13.75	31.4	-0.71	-1.56	2.2340	-0.0005	-0.0009	-0.0054	-0.0106	0.0009	0.0108
113	13.76	31.5	-0.65	-3.60	2.2315	-0.0007	-0.0010	-0.0080	-0.0116	0.0010	0.0120

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= 4.1 ΩR= 340 (ref. rad., tip speed)	CD*	CL*/sigma* sigma*= 0.0856	CD*/sigma*	CT* (see CL*, CD*)	CT*/sigma*
114	13.77	31.6	-1.07	0.58	3.4381	0.0001	-0.0015	0.0013	-0.0174	0.0015	0.0174
115	13.78	31.7	-1.02	3.17	3.4331	0.0005	-0.0014	0.0064	-0.0164	0.0014	0.0166
116	13.79	31.8	-0.96	4.17	3.4317	0.0007	-0.0014	0.0079	-0.0161	0.0014	0.0162
117	13.80	31.9	-1.03	-0.77	3.4361	-0.0005	-0.0014	-0.0053	-0.0163	0.0014	0.0165
118	13.81	31.10	-1.05	-3.64	3.4385	-0.0009	-0.0015	-0.0106	-0.0178	0.0016	0.0181
128	13.82	31.11	-0.98	0.78	3.4349	0.0002	-0.0013	0.0018	-0.0152	0.0013	0.0152
129	13.83	31.12	-1.06	3.10	3.4411	0.0005	-0.0013	0.0061	-0.0151	0.0013	0.0152
130	13.84	31.13	-1.02	4.79	3.4425	0.0007	-0.0013	0.0087	-0.0153	0.0013	0.0156
123	13.85		-1.05	0.60	3.4387	0.0001	-0.0016	0.0016	-0.0184	0.0016	0.0184
122	13.86	31.14	-1.01	0.58	3.2356	0.0001	-0.0016	0.0014	-0.0182	0.0016	0.0182
124	13.87	31.15	-1.05	0.55	3.0008	-0.0002	-0.0015	-0.0020	-0.0180	0.0015	0.0180
122A	13.88	31.16	-1.04	0.21	3.2206	-0.0003	-0.0002	-0.0032	-0.0024	0.0002	0.0024
122B	13.89		-0.89	0.57	3.2280	0.0000	-0.0016	-0.0003	-0.0182	0.0016	0.0183
124A	13.90	31.17	-0.85	0.63	3.0467	0.0001	-0.0026	0.0008	-0.0308	0.0026	0.0308
125	13.91	31.18	-0.74	0.60	2.2384	-0.0002	-0.0011	-0.0020	-0.0124	0.0011	0.0123
126	13.92		-0.65	1.09	2.2357	0.0001	-0.0011	0.0006	-0.0125	0.0011	0.0125
127	13.93	31.19	-0.59	2.50	2.2370	0.0002	-0.0011	0.0026	-0.0125	0.0011	0.0126
119	13.94	31.20	-0.69	0.61	2.0203	-0.0001	-0.0011	-0.0015	-0.0130	0.0011	0.0131
120	13.95	31.21	-0.62	0.37	2.2380	-0.0002	0.0004	-0.0027	0.0044	-0.0004	-0.0044
121	13.96	31.22	-0.67	0.62	1.8057	-0.0001	-0.0026	-0.0007	-0.0309	0.0026	0.0309
131	14.1	32.1	-2.22	5.87	1.1662	0.0005	-0.0013	0.0062	-0.0153	0.0014	0.0165
132	14.2		-2.19	6.07	1.1685	0.0006	-0.0013	0.0068	-0.0156	0.0015	0.0170
133	14.3	32.2	-2.07	6.57	1.1658	0.0007	-0.0014	0.0082	-0.0161	0.0015	0.0179
133A	14.4	32.3	-2.12	8.00	1.1676	0.0009	-0.0014	0.0102	-0.0168	0.0017	0.0196
134	14.5	32.4	-2.20	4.63	1.1537	0.0003	-0.0012	0.0041	-0.0143	0.0013	0.0149
135	14.6	32.5	-2.27	3.31	1.1681	0.0002	-0.0011	0.0025	-0.0130	0.0011	0.0132
139	14.7	32.6	-2.17	5.72	1.1718	0.0005	-0.0013	0.0057	-0.0146	0.0013	0.0157
140	14.8	32.7	-2.30	6.48	1.1636	0.0007	-0.0013	0.0085	-0.0151	0.0015	0.0172
141	14.9	32.8	-2.37	7.88	1.1685	0.0009	-0.0014	0.0110	-0.0159	0.0016	0.0191
142	14.10	32.9	-2.13	4.63	1.1642	0.0003	-0.0012	0.0032	-0.0138	0.0012	0.0141
143	14.11	32.10	-1.96	3.31	1.1622	0.0001	-0.0011	0.0014	-0.0133	0.0011	0.0133
136	14.12	32.11	-2.18	5.84	1.1653	0.0005	-0.0013	0.0058	-0.0148	0.0014	0.0159
137	14.13	32.12	-2.09	5.60	1.3165	0.0002	-0.0002	0.0018	-0.0028	0.0003	0.0032

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= 4.1 ΩR= 340 (ref. rad., tip speed)	CD*	CL*/sigma* sigma*= 0.0856	CD*/sigma*	CT* (see CL*, CD*)	CT*/sigma*
138	14.14	32.13	-2.26	5.85	1.0211	0.0008	-0.0022	0.0094	-0.0258	0.0023	0.0274
		33.1									
		33.2									
		33.3									
	15.1	34.1									
	15.2	34.2									
	15.3	34.3	-0.27	0.94	0.0000	0.0001	0.0002	0.0013	0.0026	-0.0002	-0.0025
	15.4	34.4	0.09	0.67	0.0000	0.0002	-0.0017	0.0027	-0.0200	0.0017	0.0202
	15.5	34.5	0.01	0.52	0.0000	0.0002	-0.0021	0.0028	-0.0247	0.0021	0.0248
	15.6	34.6	-0.04	0.51	0.0000	0.0003	-0.0026	0.0031	-0.0304	0.0026	0.0305
	15.7	34.7	-0.05	0.49	0.0000	0.0003	-0.0031	0.0034	-0.0363	0.0031	0.0364
	15.8	34.8	0.06	0.46	0.0000	0.0004	-0.0037	0.0042	-0.0428	0.0037	0.0431
	15.9	34.9	0.15	0.59	0.0000	0.0004	-0.0042	0.0047	-0.0494	0.0042	0.0496
	15.10	34.10	0.04	0.57	0.0000	0.0004	-0.0048	0.0050	-0.0559	0.0048	0.0561
	15.11	34.11	0.03	0.58	0.0000	0.0005	-0.0055	0.0056	-0.0641	0.0055	0.0644
	15.12	34.12	-0.09	0.76	0.0000	0.0005	-0.0063	0.0057	-0.0733	0.0063	0.0735
	15.13	34.13	-0.24	0.88	0.0000	0.0005	-0.0070	0.0059	-0.0822	0.0071	0.0824
	15.14	34.14	-0.01	0.97	0.0000	0.0005	-0.0078	0.0064	-0.0915	0.0078	0.0916
	15.15	34.15	0.15	0.96	0.0000	0.0006	-0.0087	0.0075	-0.1022	0.0088	0.1025
	15.16	34.16	0.13	1.07	0.0000	0.0007	-0.0095	0.0079	-0.1115	0.0096	0.1118
	15.17	34.17	0.12	1.20	0.0000	0.0007	-0.0104	0.0083	-0.1219	0.0105	0.1222
	15.18	34.18	0.17	1.31	0.0000	0.0007	-0.0112	0.0086	-0.1312	0.0113	0.1315
	15.19	34.19	0.25	1.43	0.0000	0.0008	-0.0122	0.0091	-0.1423	0.0122	0.1426
	15.20	34.20	-0.03	0.68	0.0000	0.0002	-0.0015	0.0025	-0.0177	0.0015	0.0179
	15.21	34.21	-0.12	0.72	0.0000	0.0002	-0.0013	0.0023	-0.0152	0.0013	0.0153
	15.23	35.1	-0.11	0.92	0.0000	0.0002	-0.0010	0.0022	-0.0121	0.0010	0.0123
	15.24	35.2	-0.38	0.85	0.0000	0.0002	-0.0007	0.0019	-0.0086	0.0008	0.0088
	15.25	35.3	-0.25	0.77	0.0000	0.0001	-0.0003	0.0016	-0.0039	0.0003	0.0040
	15.26	35.4	-0.27	1.05	0.0000	0.0002	-0.0006	0.0018	-0.0073	0.0006	0.0075
	15.27	35.5	-0.27	0.76	0.0000	0.0002	-0.0009	0.0020	-0.0106	0.0009	0.0107
	15.28	35.6	-0.27	0.79	0.0000	0.0002	-0.0011	0.0021	-0.0134	0.0012	0.0135
	15.29	35.7	-0.21	0.89	0.0000	0.0002	-0.0014	0.0023	-0.0168	0.0014	0.0169
	15.30	35.8	0.13	0.83	0.0000	0.0002	-0.0017	0.0026	-0.0202	0.0017	0.0203

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
	15.31	35.9	-0.05	0.78	0.0000	0.0002	-0.0020	0.0026	-0.0236	0.0020	0.0238
	15.32	35.10	0.08	0.59	0.0000	0.0003	-0.0023	0.0031	-0.0274	0.0024	0.0275
	15.33	35.11	0.02	0.65	0.0000	0.0003	-0.0027	0.0033	-0.0316	0.0027	0.0317
	15.34	35.12	-0.03	0.64	0.0000	0.0003	-0.0031	0.0036	-0.0365	0.0031	0.0366
	15.35	35.13	-0.05	0.64	0.0000	0.0003	-0.0036	0.0039	-0.0420	0.0036	0.0422
	15.36	35.14	-0.05	0.64	0.0000	0.0004	-0.0040	0.0043	-0.0469	0.0040	0.0470
	15.37	35.15	-0.03	0.63	0.0000	0.0004	-0.0045	0.0047	-0.0526	0.0045	0.0528
	15.38	35.16	-0.16	0.69	0.0000	0.0004	-0.0050	0.0049	-0.0585	0.0050	0.0587
	15.39	35.17	-0.14	0.69	0.0000	0.0005	-0.0055	0.0053	-0.0638	0.0055	0.0641
	15.40	35.18	-0.14	0.69	0.0000	0.0005	-0.0059	0.0057	-0.0695	0.0060	0.0698
	15.41	35.19	-0.15	0.70	0.0000	0.0005	-0.0062	0.0059	-0.0721	0.0062	0.0723
	15.42	35.20	-0.15	0.69	0.0000	0.0005	-0.0064	0.0062	-0.0751	0.0064	0.0753
	15.43	35.21	-0.15	0.69	0.0000	0.0005	-0.0067	0.0064	-0.0782	0.0067	0.0785
	15.44	35.22	-0.16	0.69	0.0000	0.0006	-0.0069	0.0066	-0.0804	0.0069	0.0807
	15.45	35.23	-0.15	0.70	0.0000	0.0006	-0.0072	0.0068	-0.0837	0.0072	0.0840
	15.46	35.24	0.04	0.73	0.0000	0.0006	-0.0075	0.0075	-0.0872	0.0075	0.0876
	15.47	35.25	0.00	0.71	0.0000	0.0006	-0.0077	0.0075	-0.0897	0.0077	0.0900
	15.48	35.26	0.04	0.72	0.0000	0.0006	-0.0079	0.0076	-0.0922	0.0079	0.0926
	15.49	35.27	0.04	0.74	0.0000	0.0007	-0.0081	0.0080	-0.0948	0.0082	0.0952
		35.28									
	15.50	35.29	0.06	0.75	0.0000	0.0007	-0.0086	0.0085	-0.1005	0.0086	0.1009
	15.51	35.30	0.03	0.83	0.0000	0.0007	-0.0091	0.0084	-0.1059	0.0091	0.1062
	15.54	36.1	-0.14	0.94	0.0000	0.0007	-0.0095	0.0081	-0.1107	0.0095	0.1110
		36.2									
	15.55	37.1	-0.12	0.94	0.0000	0.0007	-0.0099	0.0085	-0.1156	0.0099	0.1159
	15.57	38.1	-0.08	0.88	0.0000	0.0005	-0.0061	0.0056	-0.0711	0.0061	0.0713
	15.58	38.2	0.12	1.22	0.0000	0.0008	-0.0114	0.0098	-0.1329	0.0114	0.1333
	15.59	38.3	-0.30	1.09	0.0000	-0.0002	0.0001	-0.0029	0.0011	-0.0003	-0.0029
	15.60	38.4	-0.28	0.80	0.0000	0.0000	0.0001	-0.0001	0.0009	0.0000	-0.0002
	15.61	38.5	-0.26	1.13	0.0000	0.0008	0.0001	0.0091	0.0006	0.0008	0.0091
	15.62	38.6	-0.50	0.89	0.0000	0.0012	0.0001	0.0138	0.0007	0.0012	0.0138
	15.63	38.7	-0.47	0.67	0.0000	0.0017	0.0001	0.0204	0.0006	0.0017	0.0204
	15.64	38.8	-0.13	0.88	0.0000	0.0021	0.0001	0.0240	0.0007	0.0021	0.0240

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
	15.65	38.9	0.09	0.74	0.0000	0.0025	0.0001	0.0295	0.0006	0.0025	0.0296
	15.66	38.10	0.15	0.64	0.0000	0.0030	0.0001	0.0356	0.0006	0.0031	0.0357
	15.67	38.11	0.04	0.70	0.0000	0.0036	0.0001	0.0420	0.0006	0.0036	0.0420
	15.68	38.12	0.04	0.67	0.0000	0.0042	0.0001	0.0486	0.0006	0.0042	0.0487
	15.69	38.13	0.09	0.55	0.0000	0.0049	0.0000	0.0572	0.0005	0.0049	0.0572
	15.70	38.14	0.06	0.62	0.0000	0.0055	0.0000	0.0648	0.0004	0.0056	0.0648
	15.71	38.15	0.08	0.68	0.0000	0.0063	0.0000	0.0739	0.0001	0.0063	0.0739
	15.72	38.16	0.11	0.72	0.0000	0.0072	0.0000	0.0839	0.0002	0.0072	0.0839
	15.73	38.17	0.13	0.74	0.0000	0.0080	0.0000	0.0930	0.0003	0.0080	0.0930
	15.74	38.18	0.17	0.83	0.0000	0.0088	0.0000	0.1026	0.0003	0.0088	0.1026
	15.75	38.19	0.22	0.93	0.0000	0.0096	0.0000	0.1127	-0.0003	0.0096	0.1127
	15.76	38.20	0.25	0.96	0.0000	0.0106	0.0000	0.1240	-0.0001	0.0106	0.1239
	15.77	38.21	0.24	1.09	0.0000	0.0114	-0.0001	0.1327	-0.0007	0.0114	0.1327
	15.78	38.22	0.15	0.64	0.0000	0.0063	0.0000	0.0741	0.0003	0.0063	0.0741
	15.80	39.1	-0.16	0.94	0.0000	0.0004	0.0001	0.0052	0.0011	0.0004	0.0052
	15.81	39.2	0.24	0.49	0.0000	0.0054	0.0001	0.0635	0.0007	0.0054	0.0635
	15.82	39.3	-0.21	1.23	0.0000	0.0004	0.0001	0.0046	0.0009	0.0004	0.0046
	15.83	39.4	-0.49	0.61	0.0000	0.0021	0.0000	0.0240	0.0006	0.0021	0.0240
	15.84	39.5	-0.05	0.76	0.0000	0.0030	0.0000	0.0346	0.0005	0.0030	0.0346
	15.85	39.6	-0.08	0.72	0.0000	0.0040	0.0000	0.0471	0.0003	0.0040	0.0471
	15.86	39.7	0.12	0.59	0.0000	0.0057	0.0000	0.0672	0.0000	0.0057	0.0671
	15.87	39.8	0.10	0.70	0.0000	0.0069	0.0000	0.0807	0.0003	0.0069	0.0807
	15.88	39.9	0.13	0.88	0.0000	0.0085	0.0000	0.0988	-0.0001	0.0085	0.0987
	15.89	39.10	0.20	0.99	0.0000	0.0102	0.0000	0.1190	-0.0005	0.0102	0.1189
	15.91	40.1	0.33	1.22	0.0000	0.0119	-0.0001	0.1395	-0.0010	0.0119	0.1395
	15.92	40.2	0.33	0.52	0.0000	0.0065	0.0001	0.0763	0.0007	0.0065	0.0764
	16.1	41.1	0.15	1.11	0.0000	0.0106	0.0000	0.1234	0.0003	0.0106	0.1234
	16.2	42.1	0.21	1.10	0.0000	0.0103	0.0000	0.1204	0.0003	0.0103	0.1203
	16.3	42.2	0.03	0.69	0.0000	0.0033	0.0001	0.0381	0.0007	0.0033	0.0381
	16.4	42.3	-0.17	0.67	0.0000	0.0032	0.0001	0.0373	0.0007	0.0032	0.0373
	16.5	42.4	0.08	0.62	0.0000	0.0033	0.0001	0.0382	0.0008	0.0033	0.0383
	16.6	42.5	0.07	0.56	0.0000	0.0032	0.0001	0.0377	0.0008	0.0032	0.0377
	16.7	42.6	0.06	0.56	0.0000	0.0033	0.0001	0.0380	0.0008	0.0033	0.0380

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
	16.8	42.7	0.15	0.64	0.0000	0.0043	0.0001	0.0502	0.0008	0.0043	0.0502
	16.9	42.8	0.13	0.66	0.0000	0.0052	0.0001	0.0602	0.0008	0.0052	0.0602
	16.10	42.9	0.12	0.65	0.0000	0.0061	0.0001	0.0712	0.0008	0.0061	0.0713
	16.11	42.10	0.13	0.66	0.0000	0.0071	0.0000	0.0834	0.0004	0.0071	0.0834
	16.12	42.11	0.14	0.68	0.0000	0.0081	0.0001	0.0941	0.0007	0.0081	0.0941
	16.13	42.12	0.16	0.72	0.0000	0.0090	0.0001	0.1054	0.0009	0.0090	0.1054
	16.14	42.13	0.17	0.75	0.0000	0.0094	0.0001	0.1102	0.0011	0.0094	0.1102
	16.15	42.14	0.29	0.58	0.0000	0.0033	0.0001	0.0386	0.0008	0.0033	0.0386
	16.16	42.15	0.24	0.78	0.0000	0.0032	0.0001	0.0371	0.0007	0.0032	0.0371
	16.17	42.16	0.21	0.81	0.0000	0.0033	0.0001	0.0384	0.0008	0.0033	0.0385
	16.18	42.17	0.26	0.75	0.0000	0.0034	0.0001	0.0396	0.0008	0.0034	0.0395
	16.19	42.18	0.24	0.75	0.0000	0.0039	0.0001	0.0454	0.0008	0.0039	0.0454
	16.20	42.19	0.25	0.77	0.0000	0.0044	0.0001	0.0513	0.0009	0.0044	0.0513
	16.21	42.20	0.25	0.76	0.0000	0.0049	0.0001	0.0567	0.0009	0.0049	0.0567
	16.22	42.21	0.20	0.92	0.0000	0.0053	0.0001	0.0624	0.0008	0.0053	0.0624
	16.23	42.22	0.23	0.97	0.0000	0.0057	0.0001	0.0670	0.0009	0.0057	0.0670
	16.24	42.23	0.31	0.99	0.0000	0.0060	0.0001	0.0707	0.0008	0.0060	0.0706
	16.25	42.24	-0.14	1.32	0.0000	0.0062	0.0000	0.0729	0.0002	0.0062	0.0729
	16.26	42.25	-0.12	1.43	0.0000	0.0064	0.0000	0.0745	0.0003	0.0064	0.0744
			-0.07	1.53	0.0000	0.0066	0.0000	0.0767	0.0005	0.0066	0.0767
			-6.31	-3.94	0.0000	-0.0009	-0.0136	-0.0107	-0.1586	-0.0008	-0.0090
			1.43	11.99	2.2331	0.0119	0.0006	0.1394	0.0074	0.0119	0.1394
49	12.67					0.0000	-0.0002	-0.0003	-0.0019	0.0001	0.0009
64	12.91					0.0000	0.0000	0.0003	-0.0001	0.0000	0.0003
82	13.28					-0.0001	-0.0001	-0.0009	-0.0011	-0.0001	-0.0009
94	13.57					-0.0002	0.0001	-0.0021	0.0016	-0.0001	-0.0016
94	13.58					-0.0002	0.0001	-0.0021	0.0016	-0.0001	-0.0016
108	13.71					-0.0001	0.0002	-0.0015	0.0022	-0.0002	-0.0021
	13.97					-0.0001	0.0000	-0.0015	0.0002	0.0000	-0.0002
138	14.17					0.0000	-0.0001	0.0000	-0.0015	0.0000	0.0000
	15.79					-0.0001	0.0000	-0.0016	-0.0004	-0.0001	-0.0016
	15.90										

Calculated Values

Sikorsky Aircraft Test Condition	Lorber Run Number	Witness Run, Point	Blade A1s= Blade A1gimbal+ Gimbal B1s deg.	Blade B1s= Blade B1gimbal+ Gimbal A1s deg.	Advance Ratio (propeller definition)	CL* R= ΩR= (ref. rad.,	CD* 4.1 340 tip speed)	CL*/sigma* sigma*=	CD*/sigma* 0.0856	CT* (see CL*, CD*)	CT*/sigma*
	15.93					0.0001	0.0013	0.0014	0.0146	0.0001	0.0014

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	January 1994	Contractor Report

4. TITLE AND SUBTITLE
Wind Tunnel Test of a Variable-Diameter Tiltrotor (VDTR) Model

5. FUNDING NUMBERS
NAS2-13484

6. AUTHOR(S)
David Matuska, Allen Dale, and Peter Lorber

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
United Technologies Corp.
Sikorsky Aircraft Division
6900 Main Street
Stratford, CT 06601-1381

8. PERFORMING ORGANIZATION REPORT NUMBER
A-94018

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
National Aeronautics and Space Administration
Washington, DC 20546-0001

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
NASA CR-177629

11. SUPPLEMENTARY NOTES
Point of Contact: Karen Studebaker, Ames Research Center, MS 237-5, Moffett Field, CA 94035-1000
(415) 604-4682

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Unclassified-Limited Distribution
Subject Category – 05

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This report documents the results from a wind tunnel test of a 1/6th scale Variable Diameter Tiltrotor (VDTR). This test was a joint effort of NASA Ames and Sikorsky Aircraft. The objective was to evaluate the aeroelastic and performance characteristics of the VDTR in conversion, hover, and cruise. The rotor diameter and nacelle angle of the model were remotely changed to represent tiltrotor operating conditions. Data is presented showing the propulsive force required in conversion, blade loads, angle of attack stability and simulated gust response, and hover and cruise performance. This test represents the first wind tunnel test of a variable diameter rotor applied to a tiltrotor concept. The results confirm some of the potential advantages of the VDTR and establish the variable diameter rotor a viable candidate for an advanced tiltrotor.

This wind tunnel test successfully demonstrated the feasibility of the Variable Diameter rotor for tiltrotor aircraft. A wide range of test points were taken in hover, conversion, and cruise modes. The concept was shown to have a number of advantages over conventional tiltrotors such as reduced hover downwash with lower disk loading and significantly reduced longitudinal gust reponse in cruise.

In the conversion regime, a high propulsive force was demonstrated for sustained flight with acceptable blade loads. The VDTR demonstrated excellent gust response capabilities. The horizontal gust response correlated well with predictions revealing only half the response to turbulence of the conventional civil tiltrotor.

14. SUBJECT TERMS	15. NUMBER OF PAGES
Variable-diameter, Tiltrotor, Wind tunnel test	238
	16. PRICE CODE: A13

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified		